
Management of Blood Loss and Transfusions Following TAVR

Introduction

Bleeding after TAVR is common. Up to 80% of bleeding episodes will happen within the first 30 days post procedure. Early experience with TAVR showed incidence of blood transfusions were as high as 30-40%. However recent data suggest there has been significant improvement and decrease of blood transfusion rate down to less than 10%. Blood transfusions after TAVR are associated with increased morbidity and mortality. Many factors contribute to a bleeding event after TAVR [1,2]. Factors can be grouped in three categories:

1. **Patient related factors:** Age, female sex, lower body mass index, chronic kidney disease, baseline anemia, heart failure, peripheral arterial disease, atrial fibrillation
2. **Procedure related factors:** Use of larger diameter bore access, transapical approach, valve migration, balloon post stent dilatation
3. **Antiplatelet and anticoagulation agents:** Patients who require anticoagulation due to conditions such as atrial fibrillation, left ventricular thrombus, arterial or venous thromboembolism [3]

Strategies that can reduce bleeding and transfusion rate

Preprocedural and planning

1. Extensive evaluation for anemia and use of bleeding assessment models prior to TAVR
 - Patients with underlying anemia should have extensive assessment for the cause of the anemia.
 - Use of hemoglobin boosting strategies with iron supplements and or erythropoietin is associated with higher Hb levels before TAVR and less need for blood transfusions after TAVR. [5] Consider hematology consult for possible initiation of epoetin alfa therapy.
2. Restrictive transfusion strategies
 - Reserving transfusions only for patients with hemodynamic instability or those with hemoglobin less than 7. [6]

3. Adopting a meticulous approach for access site planning from the noninvasive CTA images to identify pitfalls that might impose higher risk of bleeding such as calcification at the CFA access point, high femoral bifurcation.
4. Assessing preprocedural risk by listing risk factors known to be implicated in bleeding risks in percutaneous coronary intervention. Consider adopting validated existing risk scores for PCI bleeding risk until a TAVI-specific risk score is developed. [7–9]

Intraprocedural

1. Readyng reversing anticoagulation, e.g. with protamine, at time of large bore access closure.
2. Utilization of radial secondary access.
3. Readyng a peripheral balloon tamponade rescue at site of large bore access.

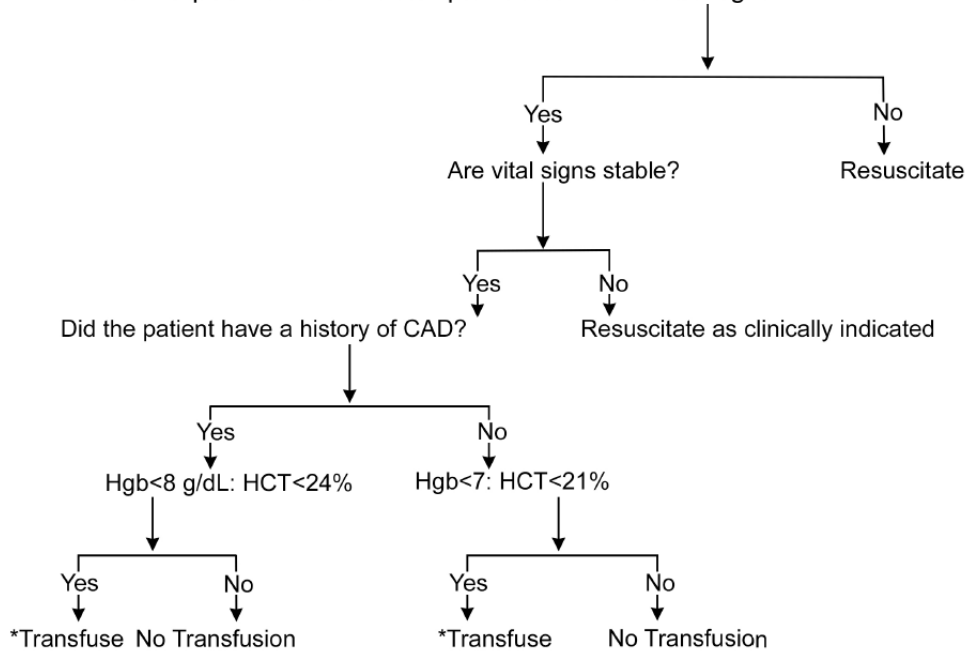
Post procedural

Choice of antiplatelet

- Recent studies suggest a single antiplatelet agent is better than a dual antiplatelet agents approach and results in less post TAVR bleeding without an increased risk of stroke.
- Patients with high bleeding risks and/or on anticoagulants should be considered for single antiplatelet therapy post-TAVR. [10]

Considering Red Blood Cell Transfusion

Did the patient have a TAVR procedure > 24 hours ago?



*Consider use of one unit RBCs which would raise the HCT by 3%

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Disclaimer

Michigan TAVR Best Practice Protocols are based on consortium-wide consensus at the time of publication. Protocols will be updated regularly, and should not be considered formal guidance, and do not replace the professional opinion of the treating physician.

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