

Management of Iron Deficiency Anemia in the Surgical Patient

Some of the questions to consider when contemplating the role of iron for anemia in surgical patients are as follows: Is anemia common in surgical patients? Is it morbid? If so, can the morbidity be decreased with intervention? What role should iron play in the intervention? The short answer is that anemia is both common and morbid in surgical patients and that there is probably a role for iron therapy in many of these patients. The data upon which most recommendations and guidelines are based is fairly weak and heavily focused on patients undergoing major joint arthroplasty.

Is anemia common in surgical patients?

Anemia is prevalent in the pre-operative setting with rates ranging from 11% to 76% according to one systematic review.¹ The preponderance of the studies related to the evaluation and management of perioperative anemia are in patients undergoing major orthopedic surgery where one analysis found that 35% of patients had hemoglobin levels less than 13 g dl at preadmission testing.²

Is anemia morbid in surgical patients?

Both pre-operative and post-operative anemia is associated with increased morbidity and mortality³⁻⁵. Adverse outcomes become more common as the degree of anemia increases. Patients with cardiovascular disease have worse outcomes with similar degrees of anemia relative to patients without cardiovascular disease. However, randomized clinical trials comparing restrictive versus liberal transfusion strategies have favored a restrictive approach even in the presence of cardiovascular disease⁶⁻⁷.

Is there a role for iron as an intervention in perioperative anemia?

Preoperative assessment and management of anemia including the use of oral or intravenous iron has been shown to improve post-operative hemoglobin and decrease exposure to allogeneic blood.⁸ A consensus statement in 2008 from the Network for Advancement of

Transfusion Alternatives (NATA) recommended that IV iron therapy be considered for patients undergoing major orthopedic surgery who are anticipated to develop severe anemia.⁹ 2011 NATA guidelines and a recent clinical study provide formal guidance regarding assessing and managing preoperative anemia in this population.^{8,10} Although some of these principles may be extrapolated to other surgical patients there is a paucity of quality evidence to provide specific evidence-based guidance.

2011 recommendations from NATA include:

- Assess hemoglobin 28 days prior to elective surgery
- Target a hemoglobin within the normal range (women ≥ 12 g dl, men ≥ 13 g dl)
- Further evaluate anemic patients for nutritional deficiencies, chronic kidney disease, and/or chronic inflammation
- Treat nutritional deficiencies that are identified
- Use erythropoiesis stimulating agents if nutritional deficiencies have been ruled out and/or corrected.

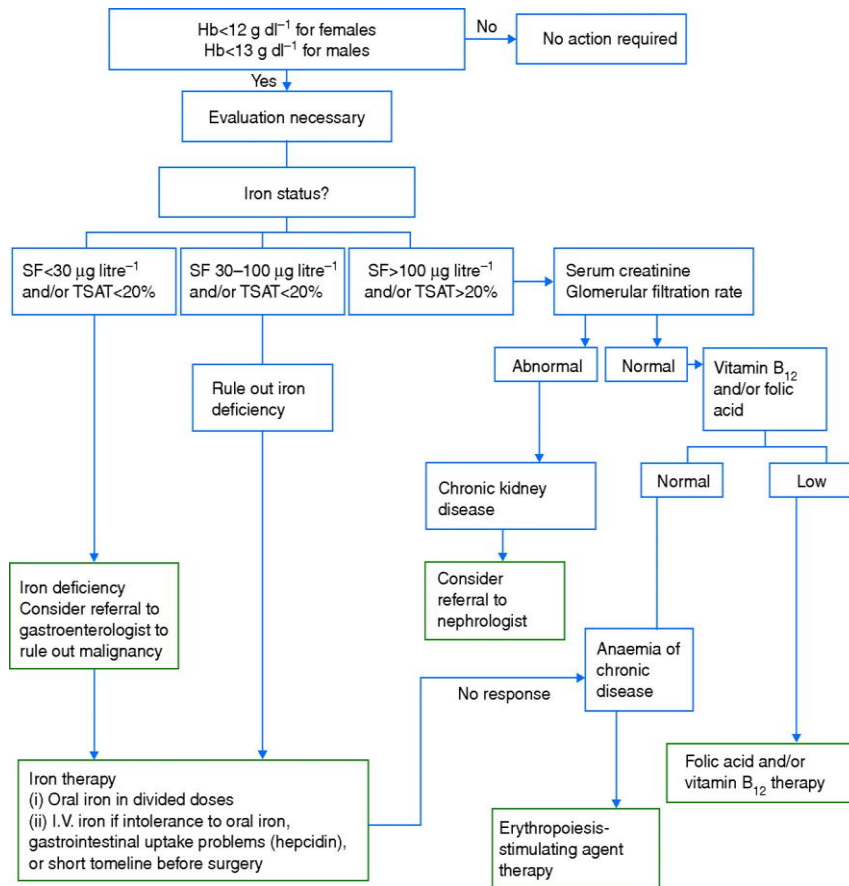
It is worth noting that we know even less about the optimal approach in patients with post operative anemia who were not anemic preoperatively. Multiple small studies have failed to show a benefit with postoperative oral iron supplementation.¹¹⁻¹⁵ However, we do know that iron deficiency is common after major surgery and we also know that oral iron absorption may be compromised by inflammation in the post operative setting.^{16,17} It stands to reason that there may be a role for parenteral iron in certain post-operative populations. A small study looking at IV iron with or without recombinant erythropoietin in post-operative anemia without preoperative anemia did show an increase in erythropoiesis at post operative day 7 although no change in hemoglobin.¹⁶ Although parenteral iron is a reasonable therapy for post-operative anemia we do not yet have adequate evidence to support or refute the practice.

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Proposed algorithm for the detection, evaluation, and management of preoperative anaemia



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