



Less is more: lessons from the COVID-19 pandemic in transfusion strategies after colorectal surgery

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Over the past 3 years, the COVID-19 pandemic has brought about significant changes in treatment strategies for patients with colorectal cancer. Delays in diagnosis and diminished focus on screening programs have led to an increased risk of advanced colorectal cancer cases [1]. The deferral of elective operations and a reduction in hospital visits have disrupted the optimal timing of treatment during the COVID-19 pandemic [2]. This is particularly true for colorectal cancer surgery, where treatment strategies involving preoperative chemoradiotherapy and surgical intervention have been affected by the pandemic. While the full oncological impact of the COVID-19 lockdown period has yet to be determined, the observed higher rates of postoperative complications and mortality may reflect the difficulties in providing adequate treatment during this time [3].

During the COVID-19 pandemic, reluctance to visit healthcare facilities led to a decline in blood donations, which in turn decreased the blood supply available for transfusions. Blood transfusions are critical in many emergency situations, but the reduced supply during the pandemic made it challenging to maintain a liberal transfusion approach. Additionally, the heightened risk of postoperative complications following transfusions underscored the need for a more restrictive transfusion strategy [4]. Generally, the hemoglobin threshold for a restrictive transfusion is considered to be 7 to 8 g/dL, while the threshold for a liberal transfusion ranges from 9 to 10 g/dL. The 2023 AABB International Guidelines for red blood cell transfusion [5] recommend a restrictive

red blood cell transfusion for hemodynamically stable patients with a hemoglobin level below 7 g/dL. A randomized controlled trial [6] showed that a restrictive red blood cell transfusion strategy is noninferior to a liberal strategy regarding mortality and morbidity in high-risk patients undergoing cardiac surgery. Furthermore, a systematic review and meta-analysis [7] indicated that restrictive transfusion strategies are beneficial in reducing all-cause mortality and rebleeding compared to liberal strategies in the treatment of gastrointestinal bleeding.

Although there were concerns that intraoperative hemodilution and anemia-related tissue hypoxia might impair perioperative recovery, the complications associated with transfusions, such as infections, allergic reactions, and coagulopathy, can be more problematic [8]. In postoperative care, transfusions can negatively affect recovery due to their immunomodulatory effects and the potential for circulatory overload, which in turn increases the risk of infection and mortality. The guiding principle for transfusions should not be to achieve predefined hemoglobin levels, but rather to optimize tissue oxygen delivery according to metabolic needs. From this perspective, a restrictive transfusion strategy has the advantage of improving postoperative recovery and reducing unnecessary blood use, thereby preventing the overuse of blood products in perioperative management.

Kim et al. [9] compared postoperative surgical outcomes between restrictive and liberal transfusion strategies in colorectal cancer surgery, both before and during the COVID-19 pandemic.

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The study found that patients who received transfusions had longer hospital stays and higher rates of infectious complications than those in the non-transfusion group. However, a subgroup analysis indicated that the lowest hemoglobin levels and postoperative transfusions were not linked to an increase in infectious complications. These findings suggest that a restrictive transfusion approach in colorectal cancer surgery is adequate for ensuring favorable surgical outcomes when compared to a liberal transfusion strategy. Despite the blood supply shortages caused by the COVID-19 pandemic, restrictive transfusion remains a reasonable and sufficient management strategy following colorectal cancer surgery. Multicenter, large-scale cohort studies are essential to collect more comprehensive data on patients affected by these pandemic-related circumstances, comparing restrictive and liberal transfusion strategies before and during the pandemic, as well as in the post-pandemic context.

The guidelines for transfusion and postoperative management after major surgery have evolved. Transfusion undoubtedly remains a critical intervention for saving lives in life-threatening situations, such as severe hemorrhage. However, to prevent the overuse of blood products and to conserve the precious resource of donated blood, a deeper understanding of transfusion principles and improvements in postoperative care are necessary. The COVID-19 pandemic has imparted valuable lessons, reinforcing the principle that “less is more” in the context of postoperative transfusion practices. Advances in the development of transfusion substitutes and the refinement of transfusion techniques may lead to improved outcomes in colorectal surgery in the years ahead.

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