Preface

Perioperative Thrombosis and Hemostasis

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The life of an expert in thrombosis and hemostasis is never dull: indeed, some of the most challenging episodes in both of our professional lives have involved managing perioperative hemostatic problems. Both of us have offices close to our respective operative theaters and intensive care units, so a quick jog round after a telephone call asking for assistance with a major bleeding problem is often an illuminating way of helping. Certainly, when dealing with multiple trauma cases that require urgent surgery and/or bleeding critically ill patients, the place of the thrombosis and hemostasis expert is flitting among sites or managing other communication efforts to help ensure best practice in managing bleeding. This includes encouraging regular hemostatic monitoring, enabling fast delivery of blood component and/or tranexamic acid.

Historically, surgery has continued for more than two millennia. The first known descriptions come from the sixth century BC when Sushruta, an Indian physician surgeon, performed cosmetic surgery.1 However, despite this, until recently there was only limited research as to the best ways to manage patients with intraoperative and postoperative bleeding. The description of the risk of venous thromboembolism being greatly increased after surgery is a relatively new phenomenon in comparison, as most of the documentation is from the 1970s onward.

There are many unanswered questions in relation to the best management to prevent and manage perioperative thrombosis and hemostasis. However, we hope this will change quickly with the many current international research programs dedicated to this area and also the establishment of an International Society of Thrombosis and Hemostasis subcommittee that focuses on this area. We are both proud to be founding members of the organizing committee and are thrilled and excited by the overflowing attendance at the meetings we have held, reflecting the interest in this subject.

We have therefore commissioned a set of articles to reflect current best practice in thrombosis and hemostasis in the many different types of surgery now available. We have enjoyed reading and editing them and hope they will encourage more enthusiasm and research in this rapidly-growing area.

Preoperative Care

Preoperative anemia predisposes to bleeding and Toby Richards and his team discuss how this can be prevented.2 There are other special groups of patients who require extra consideration prior to surgery and they include those with inherited and acquired bleeding disorders and their management is discussed by Mensah and Pavord.3 However, the largest groups with preexisting coagulopathies are those who are taking antithrombotic medication. Nikolakopoulos and Spyropoulos discuss how these patients should be bridging anticoagulation based on current evidence.4

Intraoperative Care

Major bleeding requiring resuscitation with blood products remains a complication of trauma and surgery and Levy et al discuss the current evidence and guidelines to support the use of plasma products, including prothrombin complex concentrates.5 Grottke et al review the use of fibrinogen supplementation6 and Thiele and Greinacher assess the utility of platelet transfusion in bleeding in surgery.7

Special perioperative situations include management of bleeding in those undergoing cardiac surgery using cardio-pulmonary bypass, as covered by the team managed by Teruya et al8 and also patients who have suffered trauma. Curry and Brohi discuss the management of patients with trauma who require surgery.9

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Postoperative Focus

The chapter by Marc Samama is an up-to-date review of the current state of postoperative thromboprophylaxis in prevention hospital-acquired venous thromboembolism (VTE). He highlights that the rates on VTE after surgery have fallen considerably, not just due to the widespread use of thromboprophylaxis but also due to enhanced surgical and anesthetic techniques and the move to early mobilization and discharge, postoperatively.

Whenever patients undergo surgery there is a risk of sepsis, which enhances risk of thrombosis. Iba et al discuss the current understanding of sepsis-induced coagulopathy and disseminated intravascular coagulation.

Lastly, we include in this issue an article on clot structure from Mihalko and Brown, who describe the wide variation in clot structure seen in different conditions and patients and how current research is exploring this to inform potential new ways to improve clot formation and clot lysis.

Conflicts of Interest
For J.H.L.: Research steering committees, data safety monitoring boards, on advisory boards for CSL Behring, Instrumentation Laboratories, Octapharma, Leading Biosciences, and Merck.

References
1 Sushruta: the ancient Indian surgeon. Available at: https://hekint.org/2017/01/22/sushruta-the-ancient-indian-surgeon/. Accessed October 30, 2019