

Main Risk Factors Associated with Excessive Bleeding in Patients Undergoing Elective Liver Surgery

*Līga Juzina^{1,2}, Edgars Malcevs^{1,2}, Juris Aprups¹,
Arturs Ozolins^{1,2}, Janis Vilmanis^{1,2}, Agnese Ozolina^{1,2},
Janis Nemme¹, Indulis Vanags^{1,2}, Janis Gardovskis^{1,2}*

¹Pauls Stradins Clinical University Hospital, Latvia

²Rīga Stradiņš University, Latvia

Introduction. Liver surgery may result in significant blood loss. The mechanism of bleeding is multifactorial including patient's comorbidities and impaired haemostasis due to compromised liver function. Besides those, technical factors may be responsible for intraoperative and early postoperative bleeding.

Aim. The goal of the study is to evaluate main preoperative and intraoperative risk factors for excessive bleeding during elective liver surgery.

Material and Methods. A retrospective review was performed on 54 patients consecutively admitted for elective liver resection surgery between 2010 and December 2014 at Pauls Stradins Clinical University Hospital, Riga, Latvia. Presence of malignancy, previous abdominal surgery, comorbidities and standart coagulation tests before surgery as well as the duration of surgery, extent of resection, amount of crystalloids/colloids and blood transfused were reported. Association between those factors and bleeding was analysed.

Results. In total, 53 patients, mean age of 56 years, undergoing partial hepatectomy (n = 40), trisegmentectomy (n = 5) or total right/left hepatectomy (n = 8) were analysed. Excessive bleeding (> 1500 ml) occurred in 13 patients (25%) during surgery. Demographical data, presence of malignancy, standart coagulation tests, Child-Pugh and MELD scores were constant for bleeders and non-bleeders preoperatively. Primary arterial hypertension (PAH) and steatosis were found more frequently in bleeders 5 (35%) vs. 11 (25%) and 2 (14%) vs. 0 patients. Trisegmentectomies and lobectomies were associated with higher bleeding rates compare to partial hepatectomies, 25% and 60% vs. 20%, respectively. Blood loss was significantly higher in trisegmentectomies 2000 ± 353 ml and in lobectomies 1965 ± 1347 ml compare to partial hepatectomies 1295 ± 724 ml, p = 0.03 and p = 0.04. Time of surgery was statistically longer for bleeders 4.1 vs 2.9 hours; p < 0.0001, respectively. At least one blood transfusion was administered for 42 patients (79%). Bleeders received significantly higher amounts of blood transfusions and colloids, p < 0.05. Moreover, the amount of colloids transfused correlated with the blood loss, r = 0.45; p = 0.001.

Conclusions. Such comorbidities as PAH and steatosis, as well as the extent of liver resection and duration of surgery may affect blood loss during surgery. Additionally, colloid transfusions may be one of the risk factor for excessive bleeding.