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Association of perioperative prothrombin complex concentrate and fibrinogen concentrate administration with thrombotic complications after liver transplantation

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Background and Goal of Study: Thrombotic complications after liver transplantation limit organ survival and drive morbidity and mortality. The use of intraoperative prothrombin complex concentrate (PCC) and fibrinogen concentrate administration has been linked to thrombotic events. However, it is unknown if their use is associated with thrombotic events after liver transplantation.
Materials and Methods: We conducted a retrospective, single-centre, observational study in patients undergoing orthotopic liver transplantation between 2004 and 2017 at Heidelberg University Hospital, Heidelberg, Germany. Primary composite endpoint was the occurrence of hepatic artery thrombosis, portal vein thrombosis or thrombosis of the inferior vena cava within 30 days after transplantation. Secondary endpoints were: mortality, graft failure, other thrombotic events, length of ICU and hospital stay. Patients were stratified for not receiving any coagulation factor (fresh-frozen plasma only group) or receiving fibrinogen and/or PCC (coagulation factor group). Data were analyzed using uni- and multivariate Cox regression or logistic regression analysis. Mann-Whitney-U test was performed on the continuous variables. P<0.05 was considered significant.
Results and Discussion: Data from 939 transplantations were included in the analysis. After multivariate analysis, perioperative PCC and/or fibrinogen administration was an independent predictor for the primary composite endpoint, HAT, PVT, and inferior vena cava thrombosis (OR 1.632, 95% CI 1.012-2.630, p=0.044). PCC and/or fibrinogen administration was associated with 30-day mortality after liver transplantation (OR 4.225, p<0.001), graft failure (OR 3.093, p<0.001), intraoperative blood loss (p<0.001), red blood cell concentrate transfusion (p<0.001), platelet transfusion (p<0.001), duration of hospitalisation (p<0.001) and length of stay in intensive care units (p<0.001). Previous findings in literature are heterogenous, so there is partly accordance to the results from other authors.
Conclusion: A critically review of established strategies in coagulation management during liver transplantation is warranted. Perioperative care givers should exercise caution when administering coagulation factor concentrate during liver transplant surgery. Further trials should be tailored to identify patient subgroups that will likely benefit from prothrombin complex concentrate and/or fibrinogen administration.

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Continuous Hemoglobin Measurement during Frontal Advancement Operations Can Improve Patient Outcomes

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Background and Goal of Study: Pediatric cranioplasty operations are challenging due to potential to have significant intraoperative blood loss. Massive hemorrhage may necessitate blood transfusion, which can bring about many complications. Radical-7 Pulse CO-Oximeter (Massimo Corporation, Irvine, CA) can provide continuous hemoglobin concentration (SpHb) measurements noninvasively. In this study, we aimed to evaluate the effects of SpHb measurements on the patients' perioperative blood management and postoperative outcomes.
Materials and Methods: For this retrospective case control study data of the pediatric patients aged from 2 months to 2 years that undergone fronto-orbital advancement surgery for plagiocephaly and trigonocephaly with American Society of Anesthesiologists (ASA) physical status I-II between 2018-2021 in our university hospital were collected. The patients' demographic and clinical characteristics; intraoperative hemodynamic and laboratory variables, including blood gases; intraoperative blood losses; amount of the transfused blood products; postoperative intensive care unit (ICU) and hospital lengths of stay were collected.
Results and Discussion: Data of 42 patients were collected, of which 29 were males (69%). Plagiocephaly was the diagnosis in 24 (57.1%) patients and others had trigonocephaly. In 16 of the patients perioperative SpHb monitorization was made (Group S). Other patients that were managed conventionally were considered as a control group (Group C). Demographic, clinical and perioperative hemodynamic characteristics of the patients were comparable between the groups. Groups S had significantly less perioperative packed red blood cell (PRBC) transfusion (P=0.015), less postoperative bleeding (P=0.013) and less ICU length of stay (P<0.001), compared with the Groups C (Table 1). There was positive correlation between PRBC transfusion amount and ICU length of stay (Pearson correlation test, r=0.459, P=0.003).
Conclusion: Patients with perioperative continuous SpHb measurement have less intraoperative PRBC transfusion, less postoperative bleeding, and less ICU length of stay. SpHb, together with clinical judgement and laboratory confirmation, when necessary, can be used in decision making for PRBC transfusion perioperatively.

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Clinical Effectiveness of Intraoperative Cell Salvage in Aseptic Revision Total Hip Arthroplasty: a Monocentric 10-years Experience Retrospective Study

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Background and Goal of Study: Revision of total hip arthroplasty (rTHA) is associated with a high rate of intra- and postoperative red blood cell transfusion. Blood-sparing techniques are therefore considered a quality marker of perioperative management. Whether intraoperative cell salvage (CS) should be used routinely or be dependent on patient or procedure characteristics remains controversial.1 The aim of this study is to identify the pre- and intraoperative risk factors associated with successful intraoperative re-infusion by CS in aseptic rTHA.
Materials and Methods: We performed a retrospective analysis of 140 patients who underwent aseptic rTHA with intra-operative CS at the Liège Orthopedic University Hospital between 01 January 2011 and 31 December 2020. rTHA was defined as the exchange of stem, acetabular or combined hip prosthesis component. Aseptic indications were implant wear or loosening causing pain and mechanical symptoms or traumatic rTHA. Patients were then divided into two groups according to whether or not cell at least 125 mL of saved blood could be re-infused. Data are presented as median [IQR] or n(%) and compared between the groups using the chi-square test or the Kruskal-Wallis test as appropriate. Multivariable logistic regression was used to identify independent predictors of successful re-infusion. A two-tailed P value <0.05 was considered statistically significant.
Results and Discussion: CS could be used successfully in 41 (67%) stem, 14 (47%) acetabulum, 39 (80%) combined exchange respectively (P=0.02). No patient-related risk factors was associated to re-infusion. Re-infused volume were 138 [0-250] ml, 0 [0-280] ml, 250 [112-390] ml for the stem, acetabulum or combined rTHA respectively (P=0.005).
Conclusion: Our data suggest that the type of surgery was the single best predictor of CS usefulness and effectiveness in aseptic rTHA. Admittedly, variability in re-infused volumes is important. We however believe that the use of CS should be considered even in all case of rTHA. Indeed, even in the group of isolated acetabulum replacement, it allows blood reinfusion in almost 50 % of the cases.
References:
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