retransplantations are required to save the graft and the patient. Interventional radiological approach has been described for thrombolysis but the experience is limited. Here, we describe successful thrombolysis of early asymptomatic hepatic artery thrombosis after right lobe adult-to-adult LRLT with intra-arterial urokinase infusion.

Case: A 37-year-old male patient was admitted with acute-on-chronic liver failure MELD 32, Child Turcotte Pugh Score 12 and underwent LRLT of right lobe with middle hepatic vein. Intra-operatively, his right hepatic artery was thin walled and dilated and the left hepatic artery was not suitable for reconstruction. There was a discrepancy between the graft and the recipient artery lumen. Half lumen of recipient artery was closed, and anastomosis was performed with the rest of the lumen with Prolene-8-0 in an interrupted fashion. Intra-operative Doppler was satisfactory. On postoperative day 5, arterial signals could not be traced on Doppler study and CT angiography revealed hepatic artery thrombosis with no distal flow. Patient was hemodynamically stable with no significant changes in the liver function or in the arterial lactate levels. Thrombolysis was started with live intra-arterial catheter placement with a bolus of 200,000 units of urokinase and then 40,000 U/h infusion. Angiography was repeated the next day and was showing partial thrombolysis with an adequate distal flow. Liver enzymes were satisfactory. The intra-arterial catheter was left in position with urokinase infusion. The patient was anticoagulated with Heparin, Aspirin and Clopidogrel. Serial thromboelastography was done to monitor coagulation. After 4 days, urokinase infusion was stopped. Daily liver Doppler studies were done and the patency of hepatic artery confirmed. The patient experienced one episode of bleeding from the abdominal wall on postoperative day 18 which was managed with the optimization of coagulation. The patient did not have any biliary complication throughout the episode and was discharged from the hospital on postoperative day 36.

Conclusion: Selective intra-arterial urokinase infusion may prove an effective alternative for the early hepatic artery thrombosis after LRLT.

9

LIVING-RELATED LIVER-TRANSPLANT DONOR WITH HYPERCOAGULABLE STATE—A CASE REPORT AND SUGGESTED WORKUP

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Introduction: Beside the risks related to liver extraction surgery, both thrombotic and bleeding risks are significantly increased when the donor has a prior hemostatic anomaly, even if it is slight or unknown to the patient. Mild hemostatic defects can cause severe bleeding during major surgery; patients with thrombophilic defects may

suffer from venous thrombotic events during the early postoperative period. In addition, the liver synthesizes all blood coagulation factors. Donor alterations are transferred to the recipient together with the liver graft. Several cases have been reported of liver recipients with an acquired prothrombotic state after receiving a liver graft from a donor carrying factor V Leiden mutation. Although thrombosis history is one of the most important risk factors for thrombosis, most of the thrombophilia cases are asymptomatic and thrombosis is precipitated by surgery or pregnancy. Thus, although interviewing for thrombotic events is important, it is not adequate to rule out thrombophilia. For accurate evaluation of thrombophilia, the hematological workup suggested is essential.

Case: We present a case of a 29-year-old male donor with no past medical or surgical history, body mass index of 29.2 Kg/m², and normal liver functions, who on workup was found to have high total cholesterol (214 mg/dL). He was further worked up for hypercoagulable states and was found to have high anti-phospholipid antibody (APLA) IgG and IgM (18.2 and 91.94, respectively). He also had high B2 glycoprotein IgM (228 IU); however, B2 glycoprotein IgG was normal. Also, proteins C, S, and anti-thrombin III were normal. He was negative for JAK 2V617F mutation and factor V Leiden mutation. After multidisciplinary discussion and review of literature, the risk of thrombotic event in the postoperative period was perceived to be high and in the interest of donor safety he was rejected as a donor.

Conclusion: In conclusion, careful screening for coagulation and prothrombotic disorders should be performed as part of donor selection, because thrombotic and bleeding risks related to LDLT are not restricted to the surgery itself, particularly involving the donor. Although cost-effectiveness has not been definitely established, this screening will decrease the risks of thrombosis and bleeding in the donor, and most probably in the recipient.

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DONOR HEPATECTOMY IN A POSTATRIAL SEPTAL DEFECT REPAIR PATIENT—IMPLICATIONS FOR THE ANESTHETIST AND SURGEON

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Background: Right donor hepatectomy in the setting of living donor liver transplantation (LDLT) is accepted as a safe procedure in healthy adult donors. The outcomes of this procedure in the early postoperative period after cardiac surgery however remain poorly described.

Method: A 36-year-old female with symptomatic congenital acyanotic heart disease (sinus venosus atrial septal defect [ASD]) underwent ASD closure with Dacron patch. In the

immediate postoperative period, she developed a slow junctional rhythm which was managed with atrial pacing. One month later, the patient underwent a right hepatectomy for LDLT.

Result: The mild tricuspid regurgitation that was noted in the pre-operative period on echocardiography worsened during the right hepatectomy resulting in a hyperdynamic circulation secondary to back pressure, thus, causing increased bleeding and difficult hemostasis. The patient repeatedly developed junctional rhythm intra-operatively which reverted to sinus rhythm without the need for atrial pacing. The patient required 2 blood transfusions intra-operatively, had an uneventful postoperative course, and was discharged on the sixth postoperative day. There were no further dysrhythmias.

Conclusion: Major hepatectomy in the early post-ASD repair patient has important implications for both the anesthetist and the surgeon. Knowledge of possible risk aids in achieving good peri-operative outcomes in these patients.

11

REDUCED LEFT LATERAL SECTOR LIVER TRANSPLANTATION IN CHILDREN UNDER 10 KG—LESS IS BETTER

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Introduction: Living donor liver transplantation (LDLT) in small babies poses surgical challenges such as small caliber inflow vessels, the frequent need for microvascular anastomoses, low portal inflow, and oversized grafts. The latter exaggerates low-flow states, can cause vascular compression and kinking, and may necessitate mesh-aided or staged-abdominal closure. The reported hepatic arterial thrombosis (HAT) and portal venous thrombosis (PVT) rates in such cases are 5–8% and 6–18%, respectively. We review our experience of LDLT in children under 10 Kg, in particular, the use of reduced left lateral sector (RLLS) grafts.

Method: Of 55 pediatric LDLT, 18 were done for <10 Kg babies. Nine received left lateral sector (LLS) grafts and 9 reduced left lateral sector (RLLS) grafts. In our early experience, a cavo-portal transposition was necessary for a graft with graft-recipient weight ratio (GRWR) of 4.1 owing to inadequate portal inflow. After this, we pursued the policy of reduction of large-for size grafts to obtain GRWR <2.5 and/or a portal inflow of at least 100 mL/100 g of parenchyma. Reduction was in situ in the donor (4), bench (3) or in the recipient (2) depending on when the need for it was realized.

Result: A mean of 126 g (range 60–210 g) of the liver tissue was removed by the reduction of nine RLLS grafts.

The median GRWR and postperfusion portal vein flow in the RLLS group were 2.3 (1.5–3.1) and 132 mL/100 g liver tissue. The overall, <10 Kg LLS and RLLS recipient operative mortalities were 3%, 22%, and 0%; HAT rates were 1.8%, 11%, and 0%, and PVT rates were 6%, 22%, and 11%, respectively. The single patient with HA thrombosis died, while all the 3 PVTs were successfully treated at re-laparotomy. Mesh was used for abdominal closure only in the patient with GRWR of 4.1.

Conclusion: Routine reduction of LLS grafts to GRWR <2.5 provides better size-matched livers for children under 10 Kg, results in a low incidence of serious vascular complications, circumvents the difficulties in abdominal closure, and results in excellent patient and graft survival.

12

VARIATIONS IN LIVE-LIVER DONOR HILAR ANATOMY AND CLASSIFICATION OF DONORS BASED ON ANATOMIC SUITABILITY

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Aim: The aim was to record hilar arterial, portal and biliary variations in healthy liver donors and to suggest a simple classification of donors that would impact surgical modifications in the graft/recipient and the suitability of donation.

Method: Hilar anatomy was analyzed from pre-operative imaging, and operative details in 501 donor hepatectomies between 2005 and 2010 were recorded. Classifications used were Makuuchi's and Michell's for arterial, Nakamura's for portal and Huang's for biliary. Donors were classified into Class 1 (needed no modifications in graft before implantation), Class 2 (suitable for donation but needed reconstructive modifications in graft/recipient), and Class 3 (were not suitable for donation due to anatomic variations precluding safe donation or implantation).

Result: A total of 501 patients (250 males and 251 females; mean age 33.7 ± 9.84 years), with 440 right lobes and 61 left lobe grafts; 245 (48.9%) patients had standard arterial anatomy, 80 (35.9%) had segment 4 from right hepatic artery (RHA), and 56 (13.1%) had replaced RHA from superior mesenteric artery (SMA). The presence of >2 graft arteries (4 donors) precluded donation. Ninety percent had standard portal vein (PV) anatomy. Six percent had trifurcation and 4% had right anterior portal vein arising from left PV. The presence of 2 PVs required Y graft reconstruction on the bench, but did not preclude donation. Donors with significant crossover, Type E, or some Type D (6 donors) were considered Class 3. Two-hundred and forty-four (55.45%) patients had standard biliary anatomy,