6 Summary

With around 71116 interventions in 2004 aortocoronary bypass surgery is one of the most frequent heart surgeries carried out in older patients in Germany.Owing to the full heparinization and the usage of a cardiopulmonary bypass pump (CBP) during surgery cardiosurgical bypass patients run a comparatively higher risk of developing a surgery-induced anemia requiring treatment with autologous blood products. Allogenic blood transfusions bear the potential risk of causing virus infections or transfusion-associated immuno-modulated diseases. When comparing the established autologous blood saving techniques acute isovolemic hemodilution (IDH) represents a feasible, cost-effective and patient friendly alternative. Previous studies, however, do not provide consistent guidelines for IDH usage with regard to the minimum oxygen supply for end organs and clinical outcome. The thesis at hand examines the influence of IDH on liver function and liver perfusion in aortocoronary bypass patients. The study's aim was to investigate whether hemodilution to a hematocrit of 20% under normothermal extracorporeal perfusion in comparison to 25% has a sustained influence on liver function. Of the 62 patients included in this prospective randomized study 59 were evaluated statistically. 31 patients were randomized into the control group (25%HC) and 28 into the study group (20% HC). The perioperative surveillance of the liver function and perfusion was carried out with established measurement methods. In order to evaluate hepatocellular damage liver enzymes (ASAT, α-glutathion-S-transferase) and lactate were determined and a MEGX test was performed. With the determination of the plasma disappearance rate via Indocyanin green dye liver perfusion was evaluated. The measurement of ASAT and α-glutathion-S-transferase concentrations as well as the MEGX tests and ICG PDR measurements were carried out preoperatively and 1h, 6h as well as 18h postoperatively. In addition the lactate concentration was controlled during cardio pulmonary bypass. Patients treated in the intensive care unit for a longer period of time owing to intercurrent complication were re-evaluated in daily ward rounds. The study results reveal a significant rise of liver perfusion under IDH but no difference between the groups. Furthermore an elevated conversion rate of Lidocain to monoethylglycinxylidid 1h and 6h postoperatively was observed both in the study and the control group. In equal measure both groups displayed surgery- and/or hemodilution-induced disturbances of hepatocellular integrity, measured via ASAT and α-GST release as well as elevated lactate levels.The current study results demonstrate

that IDH to a HC of 20% in comparison to 25% under extracorporeal perfusion during aortocoronary bypass surgeries does not compromise liver function and liver perfusion.