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Prevention and Management of Portal Vein Complications after Pediatric Living Donor Liver Transplantation

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Introduction: Portal vein (PV) complications are common after pediatric living donor liver transplantation (LDLT) due to atretic PV following repeat cholangitis and PV size mismatching. Advancements in intra-operative modulations and peri-operative care have improved outcomes over the years. We report our experience with the management of early and late PV complications after pediatric LDLT.

Methods: From June 1994 to December 2022, 356 pediatric patients received LDLT at Kaohsiung Chang Gung Memorial Hospital. Twenty-three children underwent intra-operative P4 stump stenting for inadequate PV flow during LDLT since 2009.

Results: Over a study period of 29 years, 43 pediatric patients developed PV complications after LDLT (12.1%). During the early era, PV complications occurred in 15.9%, and variceal bleeding was the most common late complication after pediatric LDLT (7%). After routinely performing the P4 stump approach for suboptimal PV flow, incidence of PV complications decreased to 11.4%, and no patients developed late variceal bleeding (0%). One patient who developed extrahepatic portal vein occlusion twelve years after LDLT suffered from repeat life threatening gastrointestinal bleeding. The patient underwent several failed attempts of treatment, including sclerotherapy, splenic artery embolization, PTA, thrombectomy, distal spleno-renal shunt, and splenectomy. He was finally successfully treated with Viabahn-assisted Meso-Rex shunt combined with Angiojet thrombectomy.

Conclusion: Our results showed significant decrease in incidence of PV complications over time, due to improvements in surgical technique, particularly the intra-operative P4 stump approach, donor and recipient selection and peri-operative management. Timely diagnosis and early management of PV complications improves overall survival and decreases incidence of late complications.