Refined surgical techniques to improve the patency of cryopreserved iliac artery homografts for middle hepatic vein reconstruction during living donor liver transplantation

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Background: A cryopreserved iliac artery homograft (IAH) has not been considered suitable for middle hepatic vein (MHV) reconstruction during living donor liver transplantation (LDLT), primarily due to the low patency from its small diameter. We revised our surgical techniques for MHV reconstruction using an IAH to improve its patency.

Methods: This study analyzed the causes of early conduit occlusion and developed revised techniques to address this that had clinical application.

Results: The potential risk factors for early conduit occlusion were the small IAH size, small graft V5/V8 opening, and small recipient MHV-left hepatic vein stump. These factors were reflected to our revised surgical methods which included endarterectomy of the atherosclerotic plaque, unification of the internal and external iliac artery branches for large V5, and branch-patch arterioplasty for large V8. IAH endarterectomy was applied to eight patients and resulted in a 1-month occlusion rate of 37.5%. Branch unification technique was applied to five patients and a 1-month occlusion rate of 20.0% was obtained. Branch-patch arterioplasty was applied to five patients leading to a 1-month occlusion rate of 40.0%. The overall patency rates of the IAH-MHV conduits in our 18 patients were 66.7% at 1 month, 38.9% at 3 months, and 33.3% at 1 year.

Conclusions: Our refined MHV reconstruction using an IAH improved short-term MHV conduit patency, but did not effectively prevent early conduit occlusion, particularly with a small- or medium-sized IAH. Individualized reconstruction designs during LDLT operation are needed when an IAH is used for a modified right liver graft.

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