

Temporary heterotopic auxiliary liver transplantation with arterialization of the portal vein as treatment of acute liver failure

doi:10.1111/j.1432-2277.2007.00452.x

A 46-year-old female patient with fulminant hepatitis B was auxiliary transplanted with a left liver lobe (segment 2–4). The anastomosis of the hepatic vein was performed end-to-side onto the right common iliac vein. The portal vein and the hepatic artery were anastomosed via a joint interposition (iliac bifurcation of the donor) with the right external iliac artery. The portal vein received its blood via the internal branch and the liver artery via the external branch of the interposition. The bile duct was stented and drained into a GoreTex prosthesis percutaneously (Fig. 1).

Neurologically, the patient improved within 24 h. Liver enzymes, synthesis parameters and bilirubin normalized steadily. Bile secretion was 120–180 ml/day. A radioisotope scan of the hepatobiliary elimination of Tc-99 m-labelled iminodiacetate on day 6 showed that the graft provided the entire hepatic function (Fig. 2).

The further clinical course was determined by a fungal septicaemia, caused by a focus present but unrecognized at the time of transplantation, in spite of antimycotic

therapy. In order to overcome septicaemia, immunosuppression was stopped completely on the 9th postoperative day. On the 14th postoperative day, a dramatic increase in serum liver enzyme activities occurred. Bile production ceased. The patient died on the 15th postoperative day.

The autopsy confirmed the generalized mycotic septicaemia. There was no thrombosis of the graft vessels. In histological tissue sections of the graft, differentiation between acute rejection and septic autolysis was impossible.

A high risk for thrombotic complications, due to the low pressure gradient between the portal vein and the inferior caval vein, has previously been identified as a major disadvantage of heterotopic auxiliary liver transplantation [1,2]. This problem was eliminated here by arterialization of the portal vein. Permanent arterialization of the portal vein in liver transplantation has so far only been used as makeshift in cases of portal vein thrombosis [3]. These experiences showed that a liver graft with arterialized portal flow can function well; only

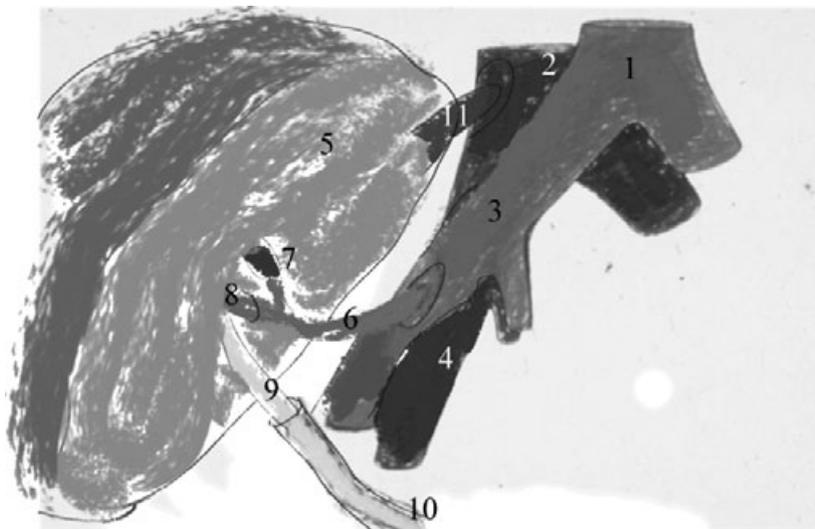


Figure 1 Position of the graft in auxiliary partial heterotopic liver transplantation with arterialization of the portal vein (1. Aortic bifurcation; 2. Caval vein; 3. Iliac artery; 4. Iliac vein; 5. graft (left liver lobe); 6. interposition (iliac bifurcation of the donor); 7. Portal vein; 8. left liver artery; 9. bile duct; 10. GoreTex prosthesis, 11. hepatic vein.

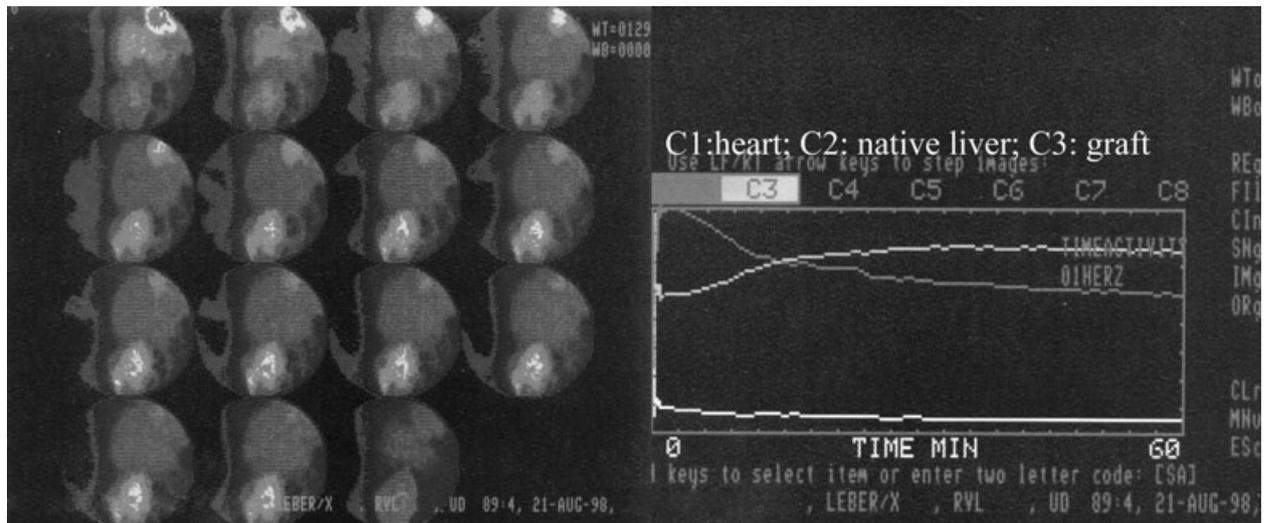


Figure 2 Radioisotope scanning with Tc-33m marked iminodiacetate after auxiliary liver transplantation. Hepatic elimination function is performed entirely by the graft in the groin.

when arterial inflow into the portal vein was excessive, turbulences and intrahepatic widening of the portal system (without histological evidence for parenchymal changes) have been described [1–4].

In addition, the retroperitoneal positioning of the graft, as used here, left the native liver and its blood supply as well as the bowel untouched, in contrast to the auxiliary partial orthotopic technique introduced by Gubernatis [5].

Retroperitoneal auxiliary liver transplantation should be limited to those indications in which regeneration of the native liver is assumed to be certain [6]. The regeneration process of the native liver should be controlled regularly by radioisotope scanning of hepatobiliary elimination, to estimate the contribution of the native liver to overall liver function [2]. Fine needle biopsy completes the monitoring of the course of progression. With liver regeneration, immunosuppression can be taken out completely [7].

In summary, auxiliary heterotopic liver transplantation with arterialization of the portal vein can be seen as an option for the bridging of acute liver failure to recovery. The heterotopic technique with retroperitoneal positioning of the graft minimizes the operative trauma.

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