

**Reprinted from transplantation**  
**Volume 47, Number 3, September 1989**  
**Copyright © 1987 by Williams & Wilkins**

**VENOUS JUMP GRAFTS FOR LIVER TRANSPLANTATION IN PATIENTS WITH PORTAL VEIN THROMBOSIS<sup>1</sup>**

When the recipient portal vein (PV) has thrombosed at or above the confluence of the splenic vein (SV) and superior mesenteric (SMV) vein in a liver transplant recipient, grafts of iliac vein or vena cava can be used in the hilum to bridge the

gap to the homograft PV (1, 2). A thrombosis that extends down into the SV and SMV can not be dealt with by this hilar approach, and in most centers the more extensive thrombotic occlusion is a contraindication to candidacy. For a number of years, we have used jump vein grafts in such cases and have evolved a technique that, in its final form, is a simple and highly satisfactory resolution to the problem.

Since the need for this kind of vein graft is sometimes not evident until the actual transplantation, the donor team should always bring back long segments of donor iliac vein (1, 3).

<sup>1</sup> This work was supported by Research Grants from the Veterans Administration and Project Grant DK 29961 from the National Institutes of Health, Bethesda, MD.

\* Abbreviations: PV, portal vein; SMV, superior mesenteric vein; SV, splenic vein.

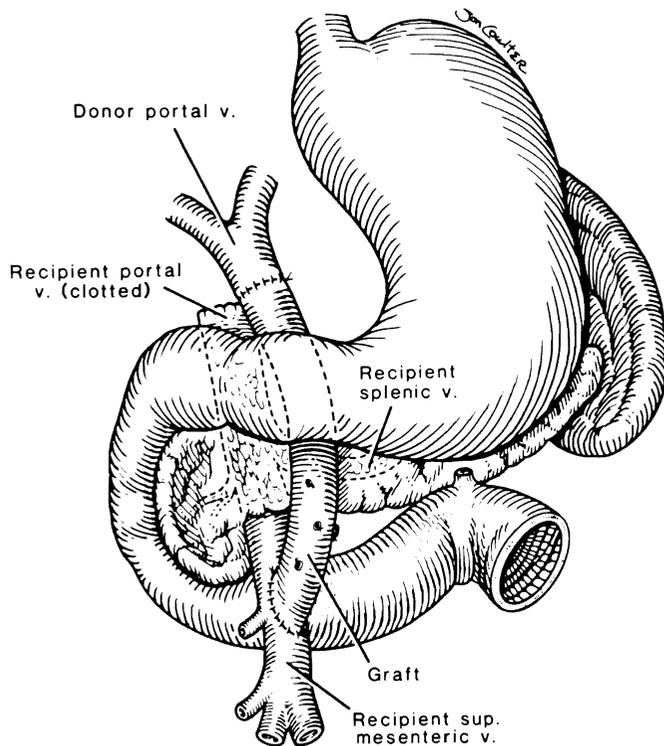


FIGURE 1. Position of completed venous jump Graft.

These vein grafts are kept in a standard tissue culture medium in the refrigerator, and can be used for at least a week. The value of this precaution was dramatically demonstrated by Sheil et al. (4) who used a mesoportal vein graft when they encountered an unexpected portal vein thrombosis in the first patient treated with liver transplantation in Australia.

When a decision for a jump graft is made, a segment of the SMV to the right of the superior mesenteric artery is skeletonized below the transverse mesocolon at the root of the small bowel mesentery (Fig. 1). The dissection should be as distal as is necessary to find a soft and compressible vessel. Depending on the anatomic circumstances, a partially or completely occluding clamp is placed on the SMV segment, and the angled

distal end of the iliac vein graft is anastomosed to the presenting surface of the SMV. The proximal end of the graft is led superiorly through a hole in the transverse mesocolon either to the right or left of the middle colic vessels, the exact location being guided by transillumination. The graft is brought anterior to the pancreas behind the gastric pylorus and into the subhepatic area (Fig. 1). The rest of the transplantation is carried out in the normal way. The vein graft is anastomosed to the portal vein of the liver graft (Fig. 1).

The patients who need these procedure are generally high-risk, and usually have intractable ascites. In spite of this, the procedure itself is technically easy and can be carried out with little blood loss. Ultrasound studies postoperatively allow determination of jump graft patency. Thrombosis of a jump graft has not been seen.

ANDREAS TZAKIS  
 SATORU TODO  
 ANDREI STIEBER  
 THOMAS E. STARZL<sup>2</sup>  
*The Department of Surgery  
 University Health Center of Pittsburgh  
 University of Pittsburgh  
 Veterans Administration Medical Center  
 Pittsburgh, Pennsylvania*

<sup>1</sup> Address correspondence to: Thomas E. Starzl, M.D., Ph.D., Department of Surgery, 3601 Fifth Avenue, Falk Clinic, Pittsburgh, PA 15213.

#### REFERENCES

1. Starzl TE, Halgrimson CG, Koep KLJ, Weil R III, Taylor PD. Vascular homografts from cadaveric organ donors. *Surg Gynecol Obstet* 1979; 149: 76.
2. Shaw BW Jr, Iwatsuki S, Bron K, Starzl TE. Portal vein grafts in hepatic transplantation. *Surg Gynecol Obstet* 1985; 161: 66.
3. Starzl TE, Hakala TR, Shaw BW Jr, et al. A flexible procedure for multiple cadaveric organ procurement. *Surg Gynecol Obstet* 1984; 158: 223.
4. Sheil AGR, Thompson JF, Stevens MS, Evers AA, Graham JC, Bookallil MJ. Mesoportal graft for thrombosed portal vein in liver transplantation. *Clin Transplant* 1987; 1: 18.