

Basic Considerations for the Procurement of Intestinal Grafts

H. Furukawa, A. Casavilla, K. Abu-Elmagd, J. Reyes, B. Nour, Z. Kadry, A. Tzakis, S. Todo, J. Fung, and T.E. Starzl

A KEY factor in successful intestinal transplantation is the procurement of intestinal grafts of good quality and satisfactory anatomy. Anatomical considerations are particularly essential at the time of intestinal procurement because the recipients require different types of intestinal transplantation, depending on the severity of extraenteric organ dysfunction.

MATERIALS AND METHODS

From May 1990 to September 1993, 59 patients received intestinal transplantation at our center. Twenty-two required an isolated intestinal (small bowel [SB]) graft, 26 required a combined liver and intestinal (SB/L) graft, and 11 required a multivisceral (MV) graft. Three additional grafts were obtained for SB (n = 1), SB/L (n = 1), and MV (n = 1) retransplantation. All 62 grafts were obtained from ABO blood type-identical cadaveric donors of slightly larger size (57% of adults and 37% of children) or smaller size (43% of adults and 63% of children). The lymphocytotoxic cross-match was strongly positive in four patients who were successfully transplanted. No attempts were made to alter the graft lymphoreticular tissue with antilymphocyte preparation or other modalities. Recently, a cytomegalovirus (CMV) seropositive donor was avoided for a CMV-seronegative recipient in isolated intestinal transplantation because of a high incidence of CMV enteritis. Gut decontamination with amphotericin B, aminoglycosides, and polymyxin E, as well as intravenous antibiotics with ampicillin and cefotaxime, were administered pre- and intraoperatively for all donors. University of Wisconsin (UW) solution was used for in situ perfusion and simple cold storage of the entire graft. The total volume of UW solution used for in situ perfusion was 1 to 2 L for adult donors and 50 to 100 mL/kg for pediatric donors. Luminal flushing with antimicrobial agents used for gut decontamination became a standard procedure when the colon was procured as a part of the intestinal graft. The logistics of the operative procedure have been described previously.¹⁻³

RESULTS

Despite thorough evaluation of the candidates and detailed planning of the operations, intraoperative findings required that the operative procedure be upgraded from SB to SB/L in two cases (3.2%), from SB/L to MV in three cases (4.8%), and from SB to MV in one case (2.6%). In addition, an upgrade from SB/L to MV was desired at the time of transplant for two patients, but the organs were not available. However, the operation was successful for both cases. Conversely, three patients that we had planned to give an SB/L were successfully treated by SB graft alone. The changing of the procurement method did not interfere with the procurement of other organs. With the possible need for additional organ replacement at the time of transplantation, multivisceral retrieval has been adopted

recently as our standard procurement technique. The graft is then tailored on the back table based on the organs needed.

In 35 donor operations in which the intestine was procured, 64 kidneys, 19 hearts, four lungs, 12 livers, and one pancreas (the other 24 livers and four pancreata went to either SB/L or MV) were also procured. The intestinal grafts were preserved with UW solution for a mean duration of 7.7 hours (range 2.8 to 11.4). No significant post-transplant complications were related to the procurement technique or the preservation method, except one occasion of pancreatitis in MV, which required removing the pancreas graft. The grafts of the last 31 patients included variable lengths of colon, ranging from the ascending colon to the descending colon. The length of colon that was transplanted depended on the remaining amount of native colon or the extent of pathological lesions in the native colon. In two patients, reconstruction of the rectum was successfully achieved by rectal pull-through of the transplanted colon. In one of the MV recipients, the normal native liver was preserved, and the retrieved liver was separated from the MV graft and given to another recipient. Also, MV graft with kidneys en bloc was successfully transplanted to the failed SB recipient.

DISCUSSION

The early series of our experience indicates that close communication between the donor surgeon and the recipient surgeon and the flexibility of the procurement method are key factors in the retrieval of anatomically suitable intestinal grafts. Recently, the multivisceral procurement including colon has become the standard retrieval procedure. This procedure has produced flexibility, allowing for variation in the recipient surgery.

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From the Pittsburgh Transplantation Institute, University of Pittsburgh Medical Center, Pittsburgh, Pennsylvania.

Address reprint requests to Satoru Todo, MD, Pittsburgh Transplantation Institute, 5C Falk Clinic, 3601 Fifth Avenue, Pittsburgh, PA 15213.

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