

THE FATE OF FAILED RENAL HOMOGRAFTS RETAINED AFTER RETRANSPLANTATION

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IN MANY TRANSPLANTATION CENTERS, it has been considered obligatory to remove failed renal homografts before, or at, retransplantation, since such grafts have been regarded as a potential hazard to the patient. At our institution, this routine has, in the last years, been applied only to grafts which failed in the immediate postoperative period and which, consequently, were considered infarcted. In contrast, grafts which have failed late from chronic rejection have been left in situ. In the present study, the fate of such retained, nonfunctioning or poorly functioning grafts was evaluated.

METHODS

Twenty-eight patients who had chronically rejected, or otherwise failed, renal homografts left in situ were studied. Eleven of these patients were females and 17 males; their ages ranged from three and a half to 45 years. Twenty-one patients had only one retransplantation, four received three grafts; two had four, and one patient had five kidney transplants. In no instance did any patient carry more than two grafts at one time. The total number of retained grafts at risk was 30. Retransplantation was carried out one month to six and a half years after the insertion of the previous graft, a mean of 33 months.

Twelve of the patients underwent hemodialysis before retransplantation, while the others were provided with new grafts before this became necessary. About two-thirds of the retained previous homografts were from related donors; the others were from nonrelated cadavers. Most of these grafts were located extraperitoneally in the pelvis, but four had been placed intra-abdominally because the recipients were children (1).

Immunosuppression was either with the double drug combination of azathioprine and prednisone

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or with a triple drug regimen consisting of azathioprine or cyclophosphamide, prednisone, and anti-lymphocyte globulin (2, 3).

Evaluation of the graft was by physical examination, standard renal function tests, and intravenous pyelograms. In several instances, technetium (^{99m}Tc -pertechnetate) or mercury (^{197}Hg -chloromerodrin) radioisotope scans were obtained.

RESULTS

Fourteen patients died five days to 21 months after retransplantation, a mean of six months. In each patient but one, the fatal outcome apparently was unrelated to the retained previous homograft. At autopsy, the original grafts showed various degrees of rejection and fibrosis. In the one exceptional instance, the retained previous graft was totally necrotic and infected at postmortem examination. This patient was a 13 year old girl in whom an intraabdominal, poorly functioning, cadaveric graft was left in situ after implantation of a maternal kidney. Two and a half months after the latter transplantation, *Escherichia coli* septicemia developed and she died. At autopsy, the infected cadaveric graft grew out the same bacteria. There had been no local symptoms from the necrotic kidney.

In the 14 surviving patients, the follow-up time since retransplantation ranges from four to 34 months, a mean of 17 months. According to clinical criteria, the cause of failure of the previous grafts was rejection in all instances. In three of the surviving patients, symptoms developed from the retained previous grafts 13, 20, and 21 months after retransplantation. All three patients complained of pain and tenderness at the graft site. One patient had a sudden occurrence of large numbers of leukocytes in the urine; the other two had a normal urinalysis. Two of the patients had a low grade fever.

Renal scans showed no uptake of radioisotope at the site of the retained old graft (Fig. 1). In one patient, there was a sudden disappearance in excre-

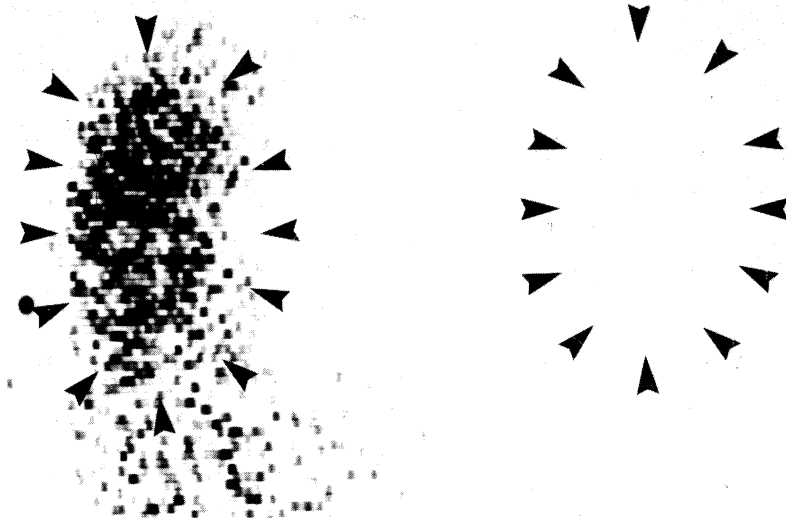


FIG. 1. Mercury radioisotope renal scan in a patient with retransplantation in whom pain and tenderness developed above the right side of the groin, where a poorly functioning first homograft had been left in situ. The second graft on the left side shows normal uptake; the first graft cannot be visualized. On removal, the old graft was found to be partially infarcted.

tion of radiographic contrast media. After nephrectomy, the patients were relieved of the symptoms, and there were no postoperative complications.

Another three patients had nonfunctioning previous grafts removed, one, one, and two months after retransplantation. In two instances, the decision for nephrectomy was arbitrary. In the third patient, the graft was removed because it was feared to be a cause of hypertension. Postoperatively, the arterial blood pressure of the patient decreased.

In three patients who underwent retransplantation because the first grafts had failed, presumably because of rejection after one, three, and 25 months, the function of the original grafts appeared to improve. At the time of retransplantation, the first grafts had not showed excretion of radiographic contrast media, but later, they showed sufficient concentration to reveal good quality pyelograms bilaterally (Fig. 2).

DISCUSSION

It has been customary to excise grafts which fail after months or years of function, mainly because of the fear that such nonfunctioning grafts could become necrotic and infected. The findings in the present study indicate that such events can indeed take place. In three patients, grafts that were still providing life-sustaining function at the time of retransplantation underwent partial necrosis many months later. The most significant symptoms were

local pain and tenderness. The diagnosis of infarction was supported by the disappearance of isotope uptake in the graft. These grafts were removed before they caused harm to the host. However, the potential danger of omitting removal of such necrotic grafts was illustrated by the course in the



FIG. 2. Intravenous pyelogram of a patient in whom retransplantation was done with a cadaveric graft—left side—three months after the receipt of a maternal graft—right side. At the time of the retransplantation, the first graft had ceased to function, presumably due to rejection. Five and a half months later when this pyelogram was obtained, there was excellent visualization of both grafts.

child in whom an intra-abdominal failed graft became the unrecognized focus of a lethal infection. The intra-abdominal location of the graft prevented the expression of local symptoms with subsequent failure to diagnose and treat the condition.

Arterial hypertension, pronounced proteinuria, or persistent urinary tract infection also might justify removal of a previous graft. In the presently reported patients, nephrectomy was carried out for such an indication only in one instance.

In spite of the aforementioned valid reasons for homograft nephrectomy, we have had an increasing tendency to leave homografts in place, unless there is a specific indication for their removal. In part, this has resulted from a subtle change in our attitude about the proper timing of retransplantation. Increasingly, retransplantation has been carried out before complete renal homograft failure and before the necessity of returning the patient to dialysis. In such recipients, the remaining function of the old graft has been depended upon prior to retransplantation, and, afterward, it has sometimes been crucial during a temporary period of acute tubular necrosis or severe, early rejection of the new kidney.

It is of interest that at least three retained homografts which had been judged as having failed due to rejection resumed some function after the retransplantation. The high prednisone dosages given over the first month after retransplantation prob-

ably accounted for this favorable change, although conceivably the reappearance of a good quality pyelogram may have been due to relief of azotemia, as has sometimes been described after hemodialysis.

SUMMARY

The fate of nonfunctioning or poorly functioning renal homografts which were left in situ at retransplantation was studied in 28 patients. In one recipient, lethal septicemia developed secondary to necrosis as well as infection of a retained intra-abdominal graft. In three other patients, subsequent symptoms developed from retained extraperitoneal pelvic grafts, and these kidneys were removed without complication. It is suggested that grafts placed extraperitoneally can be left in place if retransplantation becomes necessary, provided that there is careful follow-up study for signs of necrosis or infection. Removal of the kidney graft then may be performed electively at a later time, or this may never become necessary in a significant number of patients.

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