

# Surgical Complications in 1000 Renal Transplants

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**K**IDNEY transplantation has improved tremendously over the past decades. After the introduction of cyclosporine (CyA), delayed graft function and surgical complications became the most important prognostic factors.<sup>1</sup> Early diagnosis and management can save the grafted kidney and prevent life-threatening complications.<sup>2-4</sup> We investigated the surgical complications in 1000 kidney transplantations at our center.

## PATIENTS AND METHODS

From June 1980 to February 2001, a total of 1000 kidney transplantations were performed in our department. In 985 cases, the kidney came from a cadaveric donor; in the remaining 15 cases, it came from a living-related donor. The average age of the recipients was 40.7 years and male:female patient ratio was 663:337. From 1980 to 1985, the immunosuppressive protocol included prednisone and azathioprine with low-dose CyA added to patients treated after 1985. From 1980 to 1987, ureteroneocystostomy was mainly performed using a modified Politano-Leadbetter technique. Since then, we have adopted the extra-vesical Lich-Gregoir technique with temporary ureteral stenting. For the majority of the procedures (84.1%), we have used the common iliac artery for an end-to-side arterial anastomosis. Surgical complications occurring at any time after transplantation were recorded, as all transplant patients continued to be followed at our institution except in the case of graft loss or death. All patients in the series were followed for at least a year. The list of complications included urological, vascular, lymphatic, and wound-related problems.

## RESULTS

There were 154 (15.4%) postoperative surgical complications. The urological complications were as follows: urinary obstruction in 31 (3.1%) patients, ureteral fistulae in 25 (2.5%), and distal ureteral necrosis in 4 (0.4%). There were 2 (0.2%) vesical ruptures, 1 calcification of the stent, and 1 broken stent after traction. Twenty-four of the 25 fistulae occurred within 4 weeks after transplantation, while the interval to onset of obstruction ranged from 10 days to 11 years. Obstructions were cured by open surgery in 23 cases, by endoscopic incision in 4 cases, and by temporary stenting in 4 others. Among the patients with urinary leakage, 23 were treated surgically and 2 conservatively (Table 1).

Vascular complications developed after 14 (1.4%) transplants: 6 (0.6%) renal artery thromboses, 3 (0.3%) venous thromboses, 2 artery aneurysms, 1 arterial stenosis, 1 arterial kinking, and 1 arterial dissection. All patients were reoperated.

**Table 1. Management of Ureteral Complications**

Complication	Number	Management
Obstruction	12	Ureteropyelostomy
	11	Ureteroneocystostomy
	4	Endoscopic incision
	4	Temporary stenting
Fistulae	10	Ureteroureterostomy
	9	Ureteroneocystostomy
	4	Ureteropyelostomy
	2	Temporary stenting

The lymphoceles that occurred in 26 (2.6%) patients were mostly treated conservatively, with only 6 cases requiring surgical drainage. There were 50 (5.0%) wound-related complications: 32 wound hematomas and 18 wound infections.

Overall, seven (0.7%) grafts were lost, all due to vascular complications (5 to arterial thrombosis and 2 to venous thrombosis), despite early surgery. One patient died of septicemia after a urinary obstruction. The actuarial graft survival rates at 1, 3, 5, 10, and 15 years are 92%, 86%, 78%, 60%, and 50%, respectively.

## DISCUSSION

Renal graft survival is directly related to recipient and donor selection, protocols of immunosuppression, surgical technique, and management of complications.<sup>5</sup> Surgical complications have become relatively infrequent; they rarely lead to graft loss or death, and are usually technical.<sup>3</sup> The frequency of surgical complications in our study is within the range of other series. These complications have traditionally been managed by open surgical correction, although there is an increasing tendency to apply minimal invasive techniques.<sup>4,5</sup>

Urological complications are the most common post-transplant problems, with contemporary incidence rates from 4% to 13%.<sup>6-8</sup> This complication began to decrease

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with the introduction of low-dose steroid protocols. The surgical technique and the vascularity of the donor ureter are the main causes of urological complications, although the contribution of rejection has yet to be clarified.<sup>6</sup> The technique of ureteroneocystotomy does not seem to influence the incidence of these complications.<sup>9</sup> In our series the primary treatment option remained an open operation.

Vascular complications, despite being rare (1.4%), have devastating consequences, particularly arterial and venous thrombosis, with seven graft losses despite immediate surgical exploration. There has been a decreasing incidence of lymphoceles due to minimal vessel dissection and proper drainage. Good patient selection and a perfect technique are the best ways to prevent surgical complications. Regular follow-up with early diagnosis and management can decrease the morbidity and mortality associated with these complications.

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