

INTRODUCTION

In a remarkably short period of time renal transplantation has developed from an experimental procedure to the preferred therapy for chronic renal failure.

The problems which must be solved to obtain a successful renal transplant are many but may be resolved into a small number of categories.

- (1) The acquisition of a kidney which is healthy at the time of implantation.
- (2) The technical aspects of the implantation.
- (3) Prevention and treatment of rejection.
- (4) Diagnosis and treatment of complications.

This presentation focuses upon the second category and specifically the genitourinary aspects of the implant.

Reconstruction of the drainage system for several types of allografts has proven to be an obstinate problem. The common bile duct of the liver, the exocrine duct of the pancreas, and the ureter of the kidney are all technically difficult reconstructions and fraught with complications.

Since renal transplantation became common, complications from the ureteral reconstruction have been presented in many publications. These have probably underestimated the morbidity since a direct cause and effect is not always clear; for example, wound infections may be related to subclinical urinary extravasation, etc. Nevertheless, it is the intent of this paper to summarize the complications reported in the literature and assess the various options of ureteral reconstruction.

LITERATURE REVIEW:

The bibliography includes 65 references which are those publications we have been able to locate, printed in English, published between 1961 and 1986 in

which the type of reconstruction was clearly stated, and in which the varieties of complications for each type of reconstruction are recorded. Numerous publications were excluded because either the various complications were not related by the authors to the specific types of reconstructions, or the specific varieties of complications occurring with different reconstructions were not clear.

RECONSTRUCTION OPTIONS:

Over the years a number of methods of reconstruction have evolved, and their use has waxed and waned. The four methods which have stood the test of time are the ureteroureterostomy, the pyeloureterostomy, the internal ureteroneocystostomy (transvesical) and the external ureteroneocystostomy (extravesical). Each has different advantages and disadvantages.

TABLE I

An overview of the complications peculiar to each method of reconstruction is shown in Table I⁽¹⁻⁵³⁾. This table was constructed from the literature review and includes 9,767 implants. It reflects what complications are most likely to occur with each reconstruction, and where they occur. It does not address the incidence of complications. Some of the data are not clear in the original publications, for example. Extravasation from the distal ureter in a pyeloureterostomy seems improbable, but when it was recorded as such it was included. Some aspects of these data are obvious, i.e., complication of cystostomy did not occur when a cystostomy was not done. However, other factors are informative. Extravasation has been more common with pyeloureterostomy and obstruction less common, than with other methods of reconstruction.

TABLES II & III

Tables II^(1-6,9-11,15,19,21,23,26-29,35-36,38-39,43-46,49,51-53) and III^(7-8,12-14,16-18,20,22,24-25,30-34,37,40-42,47-48,50) address the overall

incidence of complications from the four types of reconstruction. The data are divided into two periods in order to demonstrate trends in use of the various methods and changes in their complication rates. Several points are important. There has been a substantial reduction in the complication rate with both pyeloureterostomy and ureteroureterostomy. The complication rate of the classic internal ureteroneocystostomy seems to have stabilized at about 10%. Also noteworthy is the increased use of the external ureteroneocystostomy in the last ten years. Some comments on these changes will be presented later.