Simultaneous Pancreas and Kidney Transplantation: A Retroperitoneal "Bilateral Rutherford-Morison Incision" Approach

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OVERVIEW

Simultaneous pancreas-kidney transplantation (SPKT) is a technically challenging procedure with several possible post-operative complications and must be carried out in a short period of time in order to reduce organ ischemia-reperfusion damage [1, 2, 3].

Here, we describe a modified model of retroperitoneal systemic-enteric drainage that facilitate SPK graft transplantation by a "bilateral Rutherford-Morison incision" approach and to reduce both kidney and pancreas cold ischemia time.

Since February 2018, we performed 2 SPKT with this surgical technique. We started the procedure with the kidney transplantation through a left Rutherford-Morison incision into the retroperitoneal space.

Parallelly a second surgical team proceeds to the back-table pancreas preparation.

When the kidney transplantation procedure is completed, the pancreas graft is ready to be implanted through a right Rutherford-Morison incision and a fully retroperitoneal approach during the vascular suture realization. The enteric suture was performed after bringing a jejunal loop through a peritoneal window and the graft was covered by colon and mesocolon ascendens and was positioned in the right retroperitoneal space.

SPKT demographics data and results are shown in **Table 1.**

The clinical course of both patients was followed for 36 months.

No episode of acute rejection or graft dysfunction and no additional morbidity due to the modified technique were observed.

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We believe that this bilateral retroperitoneal approach that we describe for the first time provides two major contributions. Firstly, it leads to an easy access to the recipient vessels. Secondly, it reduces the ischemia time by performed kidney grafting while the pancreas back-table work-up is running **Table 2**.

Table 1. Demographic data and results.

Recipient	**Case 1**	**Case 2**
Recipient age (years)	37	30
Gender	Female	Female
BMI (kg/m^2)	22	30
Type of diabetes	IDDM	IDDM
Duration of diabetes (years)	34	21
Duration of hemodialysis (years)	3	3
Pannel reactive antibodies (%)	7	0
Donor		
Donor age (years)	21	18
Gender	Male	Male
BMI	23	22
HLA-mismatch	4	3
Kidney anatomy		
Side	Right	Right
Artery (n)	1	1
Vein (n)	1	1
Ureter (n)	2	1
Pancreas Anatomy		
Portal vein (length)	Long	Long
Aortic patch (Coeliac axis and SMA)	No	Yes
Duodenum	Yes	Yes
Surgical results		
Duration of transplantation (min)	275	240
Cold Ischemia time (min)		
Kidney	423	449
Pancreas	544	559
Warm Ischemia time (min)		
Kidney	43	28
Pancreas	54	45
Double J Stent	Yes	No
Pancreatic arterial reconstruction	Yes	No
Postoperative course		
Hospital stay (days)	15	14
Complications	None	Urinary infection
C. Peptide: 3 Years (nmol/L)	1.17	0.79
Serum creatinine: 3 Years (mg/dl)	1.09	0.81
Hospital stay (days)	15	14
Complications	None	Urinary infection

Table 2. Surgical and postoperative results.

Surgical results	Case 1	Case 2
Duration of transplantation (min)	275	240
Cold Ischemia time (min)		
Kidney	423	449
Pancreas	544	559
Warm Ischemia time (min)		
Kidney	43	28
Pancreas	54	45
Double J Stent	Yes	No
Pancreatic arterial reconstruction	Yes	No
Postoperative course		
Hospital stay (days)	15	14
Complications	None	Urinary infection
C. Peptide: 1 Year (nmol/L)	1.17	0.79
Serum creatinine: 3 Year (mg/dl)	1.09	0.81

FINANCIAL INTEREST

No financial interest to disclose.

FUNDING

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CONFLICT OF INTEREST

No conflict of interest to disclose.

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