

Comparison of rejection in pancreas and kidney biopsies in SPK patients with graft dysfunction



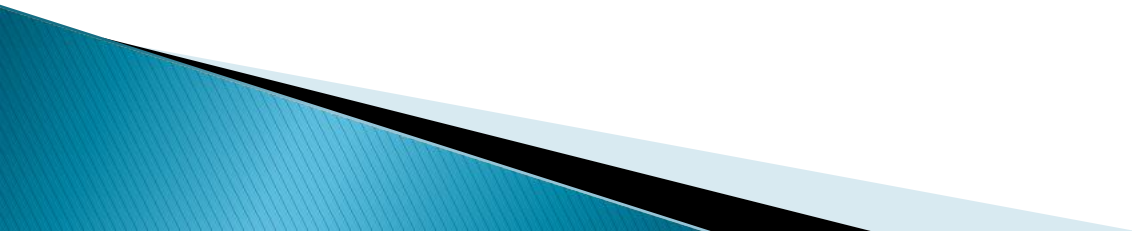
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I HAVE NO DISCLOSURES



INTRODUCTION

- ▶ There is no reliable laboratory test or imaging study for detection of pancreas rejection
 - ▶ Kidney Fx Tests also not reliable due to discordant rejection
 - ▶ Interest in obtaining pancreas tissue
 - ▶ Diagnosis of acute rejection
 - ▶ Degree (Banff) / Type of rejection (TCMR – AMR)
 - ▶ Evaluation of chronic damage – drug toxicity
 - ▶ Other (recurrence?)
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INTRODUCTION

- ▶ Simultaneous laparoscopic biopsies of both kidney and pancreas
 - ▶ Over 200 pancreas biopsies
 - ▶ Low morbidity and high tissue yield

INTRODUCTION

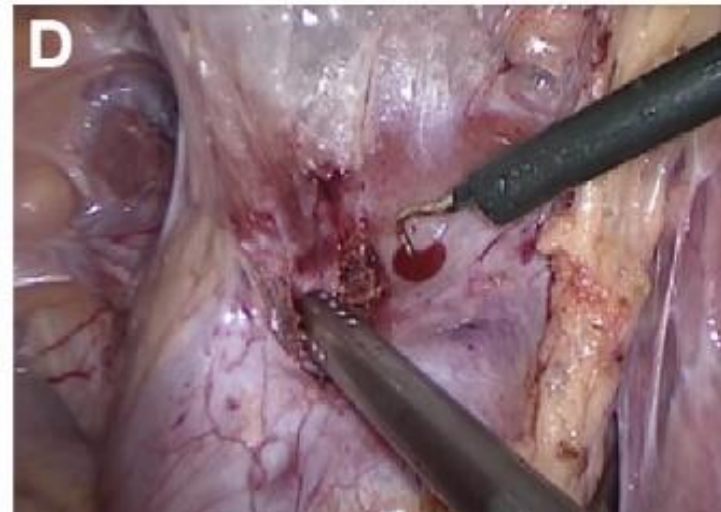
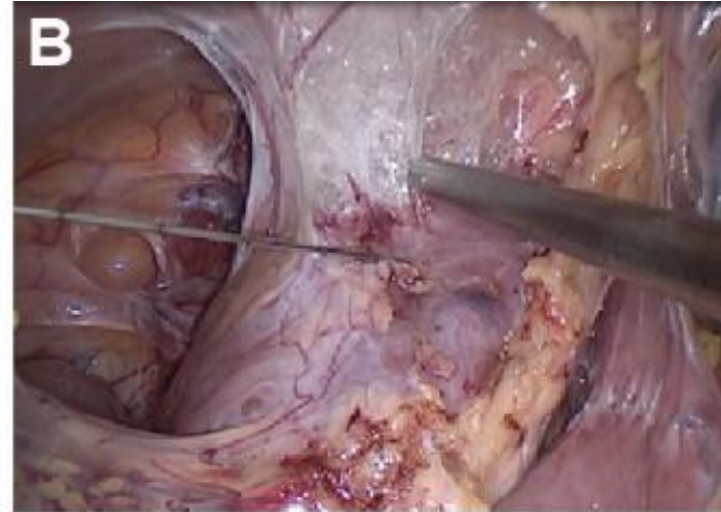
- ▶ Simultaneous laparoscopic biopsies of both kidney and pancreas
 - ▶ Over 200 pancreas biopsies
 - ▶ Low morbidity and high tissue yield

LAPAROSCOPIC BIOPSIES IN PANCREAS TRANSPLANTATION

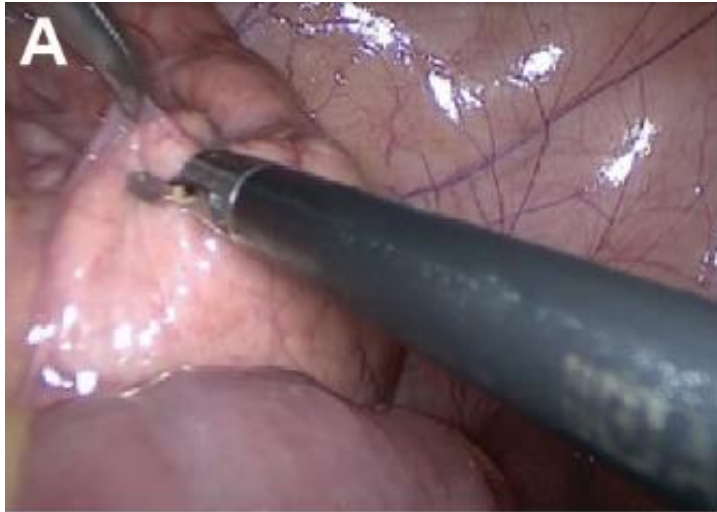
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Transplantation

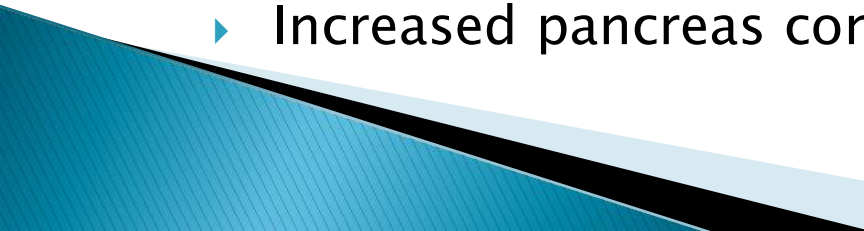
TECHNIQUE



TECHNIQUE



MATERIALS AND METHODS

- ▶ Simultaneous pancreas and kidney biopsies in SPK patients between January, 2012 and January, 2017
 - ▶ Performed due to either graft dysfunction
 - ▶ Kidney dysfunction leading to biopsy included
 - ▶ Rise in serum creatinine
 - ▶ Appearance of proteinuria (Above 1 gr/L) (intestinal drainage)
 - ▶ Pancreas dysfunction leading to biopsy included
 - ▶ Rise in serum amylase and lipase
 - ▶ Hyperglycemia
 - ▶ Increased pancreas consistency and tenderness
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RESULTS

- ▶ 101 Biopsies in SPK for graft dysfunction
- ▶ Tissue Yield
 - ▶ 6 cases no pancreas tissue was recovered
 - ▶ 95 cases with both kidney and pancreas tissue for analysis
- ▶ Reason of biopsy
 - ▶ Kidney dysfunction 41 cases
 - ▶ Kidney and Pancreas dysfunction 19 cases
 - ▶ Pancreas dysfunction 35 cases

RESULTS

- ▶ Kidney Dysfunction Group
- ▶ 41 Biopsies
 - ▶ 15 Kidney Rejection
 - ▶ 3 Concomitant Pancreas Rejection (20%)
 - ▶ 12 No Pancreas Rejection (80%)
 - ▶ 26 No Kidney Rejection
 - ▶ 2 Pancreas Rejection (8%)
 - ▶ 24 No Pancreas Rejection (92%)

RESULTS

Dysfunction	Kidney	Pancreas
Kidney	Rejection (Borderline)	Normal
Kidney	Rejection (Borderline)	Normal
Kidney	Rejection (TCMR 1A)	Rejection (Indeterminate)
Kidney	Rejection (TCMR 1A)	Rejection (TCMR 1)
Kidney	Rejection (TCMR 1A)	Chronic changes
Kidney	Rejection (TCMR 1A)	Normal
Kidney	Rejection (TCMR 1A)	Normal
Kidney	Rejection (TCMR 1A)	Normal
Kidney	Rejection (TCMR 1A)	Normal
Kidney	Rejection (TCMR 1A)	Normal
Kidney	Rejection (TCMR 1A)	Normal
Kidney	Rejection (TCMR 1B)	Normal
Kidney	Rejection (AMR)	Normal
Kidney	Rejection (AMR + TCMR 1A)	Rejection (TCMR 1)
Kidney	Rejection (AMR + TCMR 1A)	Normal

RESULTS

Dysfunction	Kidney	Pancreas
Kidney	Rejection (Borderline)	Normal
Kidney	Rejection (Borderline)	Normal
Kidney	Rejection (TCMR 1A)	Rejection (Indeterminate)
Kidney	Rejection (TCMR 1A)	Rejection (TCMR 1)
Kidney	Rejection (TCMR 1A)	Chronic changes
Kidney	Rejection (TCMR 1A)	Normal
Kidney	Rejection (TCMR 1A)	Normal
Kidney	Rejection (TCMR 1A)	Normal
Kidney	Rejection (TCMR 1A)	Normal
Kidney	Rejection (TCMR 1A)	Normal
Kidney	Rejection (TCMR 1A)	Normal
Kidney	Rejection (TCMR 1B)	Normal
Kidney	Rejection (AMR)	Normal
Kidney	Rejection (AMR + TCMR 1A)	Rejection (TCMR 1)
Kidney	Rejection (AMR + TCMR 1A)	Normal

RESULTS

Dysfunction	Kidney	Pancreas
Kidney	Normal	Normal
Kidney	Normal	Normal
Kidney	Normal	Normal
Kidney	Normal	Normal
Kidney	Normal	Normal
Kidney	Normal	Normal
Kidney	Normal	Normal
Kidney	Normal	Normal
Kidney	Normal	Chronic changes
Kidney	Normal	Chronic changes
Kidney	Normal	Pancreatitis
Kidney	ATN	Rejection (TCMR 1)
Kidney	ATN	Normal
Kidney	ATN	normal
Kidney	ATN	Normal
Kidney	BKV Nephropathy	Normal
Kidney	BKV Nephropathy	Normal
Kidney	Chronic changes	Normal
Kidney	Chronic changes	Normal
Kidney	Chronic changes	Normal
Kidney	Drug Toxicity	Rejection (TCMR 1)
Kidney	Drug Toxicity	Normal
Kidney	Drug Toxicity	Normal
Kidney	Drug Toxicity	Normal
Kidney	Drug Toxicity	Normal
Kidney	Drug Toxicity	Normal

RESULTS

Dysfunction	Kidney	Pancreas
Kidney	Normal	Normal
Kidney	Normal	Normal
Kidney	Normal	Normal
Kidney	Normal	Normal
Kidney	Normal	Normal
Kidney	Normal	Normal
Kidney	Normal	Normal
Kidney	Normal	Normal
Kidney	Normal	Chronic changes
Kidney	Normal	Chronic changes
Kidney	Normal	Pancreatitis
Kidney	ATN	Rejection (TCMR 1)
Kidney	ATN	Normal
Kidney	ATN	normal
Kidney	ATN	Normal
Kidney	BKV Nephropathy	Normal
Kidney	BKV Nephropathy	Normal
Kidney	Chronic changes	Normal
Kidney	Chronic changes	Normal
Kidney	Chronic changes	Normal
Kidney	Drug Toxicity	Rejection (TCMR 1)
Kidney	Drug Toxicity	Normal
Kidney	Drug Toxicity	Normal
Kidney	Drug Toxicity	Normal
Kidney	Drug Toxicity	Normal
Kidney	Drug Toxicity	Normal

RESULTS

- ▶ In Both Kidney and Pancreas Dysfunction Group
 - ▶ 19 Biopsies
 - ▶ 10 Kidney Rejection
 - ▶ 9 Concomitant Pancreas Rejection (90%)
 - ▶ 1 No Pancreas Rejection (10%)
 - ▶ 9 No Kidney Rejection
 - ▶ 3 Pancreas Rejection (33%)
 - ▶ 6 No Pancreas Rejection (67%)

RESULTS

Dysfunction	Kidney	Pancreas
Kidney and Pancreas	Rejection (TCMR 1A)	Rejection (Borderline)
Kidney and Pancreas	Rejection (TCMR 1A)	Rejection TCMR 1)
Kidney and Pancreas	Rejection (TCMR 1A)	Rejection TCMR 1)
Kidney and Pancreas	Rejection (TCMR 1A)	Rejection TCMR 1)
Kidney and Pancreas	Rejection (TCMR 1A)	Rejection TCMR 1)
Kidney and Pancreas	Rejection (TCMR 1A)	Rejection TCMR 2)
Kidney and Pancreas	Rejection (TCMR 1A)	Chronic changes
Kidney and Pancreas	Rejection (TCMR 1B)	Rejection TCMR 2)
Kidney and Pancreas	Rejection (AMR + TCMR 1A)	Rejection TCMR 1)
Kidney and Pancreas	Rejection (AMR + TCMR 1A)	Rejection TCMR 1)
Kidney and Pancreas	Normal	Rejection TCMR 1)
Kidney and Pancreas	Normal	Rejection TCMR 1)
Kidney and Pancreas	Normal	Rejection (AMR)
Kidney and Pancreas	Normal	Normal
Kidney and Pancreas	Normal	Chronic changes
Kidney and Pancreas	ATN	Normal
Kidney and Pancreas	Chronic changes	Normal
Kidney and Pancreas	Chronic changes	Chronic changes
Kidney and Pancreas	Drug Toxicity	Normal

RESULTS

Dysfunction	Kidney	Pancreas
Kidney and Pancreas	Rejection (TCMR 1A)	Rejection (Borderline)
Kidney and Pancreas	Rejection (TCMR 1A)	Rejection TCMR 1)
Kidney and Pancreas	Rejection (TCMR 1A)	Rejection TCMR 1)
Kidney and Pancreas	Rejection (TCMR 1A)	Rejection TCMR 1)
Kidney and Pancreas	Rejection (TCMR 1A)	Rejection TCMR 1)
Kidney and Pancreas	Rejection (TCMR 1A)	Rejection TCMR 2)
Kidney and Pancreas	Rejection (TCMR 1A)	Chronic changes
Kidney and Pancreas	Rejection (TCMR 1B)	Rejection TCMR 2)
Kidney and Pancreas	Rejection (AMR + TCMR 1A)	Rejection TCMR 1)
Kidney and Pancreas	Rejection (AMR + TCMR 1A)	Rejection TCMR 1)
Kidney and Pancreas	Normal	Rejection TCMR 1)
Kidney and Pancreas	Normal	Rejection TCMR 1)
Kidney and Pancreas	Normal	Rejection (AMR)
Kidney and Pancreas	Normal	Normal
Kidney and Pancreas	Normal	Chronic changes
Kidney and Pancreas	ATN	Normal
Kidney and Pancreas	Chronic changes	Normal
Kidney and Pancreas	Chronic changes	Chronic changes
Kidney and Pancreas	Drug Toxicity	Normal

RESULTS

Dysfunction	Kidney	Pancreas
Kidney and Pancreas	Rejection (TCMR 1A)	Rejection (Borderline)
Kidney and Pancreas	Rejection (TCMR 1A)	Rejection TCMR 1)
Kidney and Pancreas	Rejection (TCMR 1A)	Rejection TCMR 1)
Kidney and Pancreas	Rejection (TCMR 1A)	Rejection TCMR 1)
Kidney and Pancreas	Rejection (TCMR 1A)	Rejection TCMR 1)
Kidney and Pancreas	Rejection (TCMR 1A)	Rejection TCMR 2)
Kidney and Pancreas	Rejection (TCMR 1A)	Chronic changes
Kidney and Pancreas	Rejection (TCMR 1B)	Rejection TCMR 2)
Kidney and Pancreas	Rejection (AMR + TCMR 1A)	Rejection TCMR 1)
Kidney and Pancreas	Rejection (AMR + TCMR 1A)	Rejection TCMR 1)
Kidney and Pancreas	Normal	Rejection TCMR 1)
Kidney and Pancreas	Normal	Rejection TCMR 1)
Kidney and Pancreas	Normal	Rejection (AMR)
Kidney and Pancreas	Normal	Normal
Kidney and Pancreas	Normal	Chronic changes
Kidney and Pancreas	ATN	Normal
Kidney and Pancreas	Chronic changes	Normal
Kidney and Pancreas	Chronic changes	Chronic changes
Kidney and Pancreas	Drug Toxicity	Normal

RESULTS

- ▶ Pancreas Dysfunction Group
 - ▶ 35 Biopsies
 - ▶ 11 Kidney Rejection
 - ▶ 9 Concomitant Pancreas Rejection (82%)
 - ▶ 2 No Pancreas Rejection (18%)
 - ▶ 24 No Kidney Rejection
 - ▶ 12 Pancreas Rejection (50%)
 - ▶ 12 No Pancreas Rejection (50%)

RESULTS

Dysfunction	Kidney	Pancreas
Pancreas	Rejection (Borderline)	Rejection (TCMR 1)
Pancreas	Rejection (Borderline)	Rejection (TCMR 1)
Pancreas	Rejection (Borderline)	Rejection (TCMR 1)
Pancreas	Rejection (Borderline)	Rejection (TCMR 2)
Pancreas	Rejection (Borderline)	Normal
Pancreas	Rejection (TCMR 1A)	Rejection (Indeterminate)
Pancreas	Rejection (TCMR 1A)	Rejection (TCMR 1)
Pancreas	Rejection (TCMR 1A)	Rejection (TCMR 1)
Pancreas	Rejection (TCMR 1A)	Rejection (TCMR 2)
Pancreas	Rejection (TCMR 1A)	Chronic changes
Pancreas	Rejection (TCMR 1B)	Rejection (TCMR 1)

RESULTS

Dysfunction	Kidney	Pancreas
Pancreas	Rejection (Borderline)	Rejection (TCMR 1)
Pancreas	Rejection (Borderline)	Rejection (TCMR 1)
Pancreas	Rejection (Borderline)	Rejection (TCMR 1)
Pancreas	Rejection (Borderline)	Rejection (TCMR 2)
Pancreas	Rejection (Borderline)	Normal
Pancreas	Rejection (TCMR 1A)	Rejection (Indeterminate)
Pancreas	Rejection (TCMR 1A)	Rejection (TCMR 1)
Pancreas	Rejection (TCMR 1A)	Rejection (TCMR 1)
Pancreas	Rejection (TCMR 1A)	Rejection (TCMR 2)
Pancreas	Rejection (TCMR 1A)	Chronic changes
Pancreas	Rejection (TCMR 1B)	Rejection (TCMR 1)

RESULTS

Dysfunction	Kidney	Pancreas
Pancreas	Normal	Rejection (TCMR 1)
Pancreas	Normal	Rejection (TCMR 1)
Pancreas	Normal	Rejection (TCMR 1)
Pancreas	Normal	Rejection (TCMR 1)
Pancreas	Normal	Rejection (TCMR 1)
Pancreas	Normal	Rejection (TCMR 1)
Pancreas	Normal	Rejection (TCMR 1)
Pancreas	Normal	Rejection (TCMR 2)
Pancreas	Normal	Rejection (TCMR 2)
Pancreas	Normal	Normal
Pancreas	Normal	Normal
Pancreas	Normal	Normal
Pancreas	Normal	Normal
Pancreas	Normal	Normal
Pancreas	Normal	Normal
Pancreas	Normal	Normal
Pancreas	Normal	Chronic changes
Pancreas	ATN	Rejection (Indeterminate)
Pancreas	ATN	Chronic changes
Pancreas	ATN	Chronic changes
Pancreas	BKV Nephropathy	Rejection (TCMR 1)
Pancreas	Chronic changes	Rejection (AMR)
Pancreas	Drug Toxicity	Drug Toxicity

RESULTS

Dysfunction	Kidney	Pancreas
Pancreas	Normal	Rejection (TCMR 1)
Pancreas	Normal	Rejection (TCMR 1)
Pancreas	Normal	Rejection (TCMR 1)
Pancreas	Normal	Rejection (TCMR 1)
Pancreas	Normal	Rejection (TCMR 1)
Pancreas	Normal	Rejection (TCMR 1)
Pancreas	Normal	Rejection (TCMR 1)
Pancreas	Normal	Rejection (TCMR 2)
Pancreas	Normal	Rejection (TCMR 2)
Pancreas	Normal	Normal
Pancreas	Normal	Normal
Pancreas	Normal	Normal
Pancreas	Normal	Normal
Pancreas	Normal	Normal
Pancreas	Normal	Normal
Pancreas	Normal	Normal
Pancreas	Normal	Chronic changes
Pancreas	ATN	Rejection (Indeterminate)
Pancreas	ATN	Chronic changes
Pancreas	ATN	Chronic changes
Pancreas	BKV Nephropathy	Rejection (TCMR 1)
Pancreas	Chronic changes	Rejection (AMR)
Pancreas	Drug Toxicity	Drug Toxicity

RESULTS

Dysfunction	Rejection	Pancreas +	Pancreas -
Kidney (41)	Kidney + (15)	3	12
	Kidney - (26)	2	24
Both (19)	Kidney + (10)	9	1
	Kidney - (9)	3	6
Pancreas (35)	Kidney + (11)	9	2
	Kidney - (24)	12	12

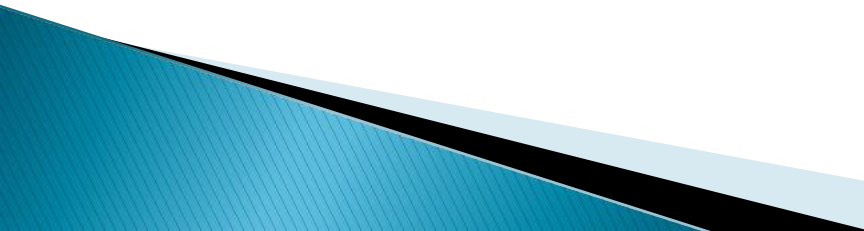
Dysfunction	Sensitivity	Specificity	PPV	NPV
Kidney (41)	60%	66%	20%	92%
Both (19)	75%	86%	90%	67%
Pancreas (35)	42%	86%	82%	50%

SUMMARY

- ▶ Pancreas rejection was concordant with kidney rejection in 21 cases among
 - ▶ 36 Kidney rejections (58%)
 - ▶ 38 pancreas rejections (55%)
- ▶ In Kidney dysfunction patients kidney biopsy could diagnose most of the patients with pancreas rejection with a NPV of 92%, however
 - ▶ There were patients with different degrees of rejection
 - ▶ PPV was only 20%
 - ▶ There were a few patients with pancreas rejection and normal kidney (8%)

SUMMARY

- ▶ In Both Kidney and Pancreas dysfunction patients the kidney biopsy had a low NPV of 67%
 - ▶ Leaving 25% of pancreas rejection cases undiagnosed
 - ▶ Discordant degrees and types of rejection (AMR vs TCMR)

 - ▶ In Pancreas Dysfunction patients the kidney biopsy had the lowest NPV (50%)
 - ▶ Leaving 57% of pancreas rejection cases undiagnosed
 - ▶ Discordant degrees and types of rejection (AMR vs TCMR)
- 

CONCLUSIONS

- ▶ In SPK patients with graft dysfunction, Simultaneous Kidney and Pancreas biopsies are very useful due to
 - ▶ High discordant rejection rates
 - ▶ Discordant degrees and types of rejection among grafts

Comparison of rejection in pancreas and kidney biopsies in SPK patients with graft dysfunction



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