



The Pancreas Can Take the Cold: Lower Waitlist Times Through Importation

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ABSTRACT

Background. Our center has used a strategy of pancreas importation owing to long regional waitlist times. Here we assess the clinical outcomes and financial considerations of this strategy.

Methods. This was a retrospective observational cohort study of patients who received a pancreas transplant at Montefiore Medical Center (MMC) from 2014 to 2017 ($n = 28$). Clinical parameters, including hemoglobin A_{1c} and complications, were analyzed. The cohort was compared with United Network for Organ Sharing (UNOS) Region 9 with the use of the UNOS/Organ Procurement and Transplantation Network database. Cost analysis of length of stay (LOS), standard acquisition (SAC) fees, and transportation was performed with the use of internal financial data.

Results. Pancreas importation resulted in significantly shorter simultaneous pancreas kidney transplant waitlist times compared with Region 9: 518 days vs 1001 days ($P = .038$). In addition, postoperative complications and 1-year HbA_{1c} did not differ between groups: local 6.30% vs import 6.17% ($P = .87$). Patients receiving local pancreata stayed an average of 9.2 days compared with 11 days for the import group ($P = .36$). As such, pancreas importation was associated with higher mean charges (\$445,968) compared with local pancreas recipients (\$325,470).

Conclusions. Long waitlist times in Region 9 have encouraged our center's adoption of pancreas importation to address the needs of our patient population. This practice has resulted in a reduction of waitlist times by an average of 483 days. Understandably, centers have long been wary of importation owing to perceived risk in clinical outcomes. In our single-center experience, we have demonstrated equivalent postoperative glucose control and graft survival. Importantly, there does appear to be increased costs associated with importation, which are mainly driven by LOS. Curiously, importation from regions with lower SAC fees has the potential to offset costs related to transportation expenses. Notwithstanding these findings, pancreas importation does have the potential to lessen the financial societal burden through reduction in waitlist times.

TO address rising wait times and decreased availability of pancreas grafts, Montefiore Medical Center (MMC) has turned to importation to help reduce the interval in which patients are awaiting pancreas transplants [1–3]. In 2014, efforts to encourage out-of-region pancreas sharing were given a boost by the United Network for Organ Sharing (UNOS) policy change regarding pancreas allocation [4]. In addition to standardizing pancreas allocation across all regions, this policy gave patients

awaiting combined pancreas and kidney transplantation waitlist priority. The likely tangential effect was an overall enthusiasm

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Table 1. Characteristics of Pancreas Transplantations at Montefiore Medical Center, 2014–2017

	Local	Import	P Value
Recipient			
Age (y)	39.6	36.5	.45
Transplantation type			
SPK	70.6%	90.9%	
PAK	29.4%	9.1%	
Sex			
Female	41.2%	54.5%	
Male	58.8%	45.5%	
Blood type			
A	23.5%	-	
B	-	27.3%	
AB	-	18.2%	
O	76.5%	45.5%	
Donor			
Age (y)	24.1	22	.34
BMI (kg/m ²)	24.3	25.3	.43
KDPI	17.9%	24.4%	.29
COD (n)			
Asphyxia	1	2	
IVDA	6	2	
Trauma	4	4	
CV	2	2	
Suicide	3	1	
Other	1	0	

Abbreviations: SPK, simultaneous pancreas and kidney; PAK, pancreas after kidney; BMI, body mass index; KDPI, Kidney Donor Profile Index; COD, cause of death; IVDA, intravenous drug abuse; CV, cardiovascular.

for pancreas allocation that has prompted organ procurement organizations (OPO) to aggressively pursue placement of pancreata. Bolstered by this resurgent interest in pancreata, importation accounts for >30% of MMC's pancreas transplant volume. Notably, this approach arose from a need to combat waitlist geographic inequity affecting centers in UNOS Region 9, including MMC [5,6]. Although importation has had the intended effect of decreasing wait times, there are other unintended consequences that have arisen. Transportation arrangements, increased length of stay (LOS), and the financial burdens of these combined entities have tempered over-exuberance [7].

Importation logistics can require high costs due to private aviation to keep cold ischemia time (CIT) short. Shortened CIT has been shown to be a critical factor for long-term graft survival in pancreas transplantation [8–10]. In addition, increased expenses from imported pancreata have been observed after surgery due to increased complications and longer LOS [7]. As such, concerns have been fairly raised regarding the cost and clinical implications of importing pancreata. Weighing this quandary, surgeons may understandably display a tendency to refuse imported pancreas offers [11–13]. However, those performing pancreas transplantation should take the long view regarding importation and advocate for the broader benefit it can provide.

To this end, here we demonstrate our experience with imported pancreata in an effort to improve patient waitlist times and evaluate clinical outcomes and cost burden compared with

locally acquired grafts. Although outcome assessment is standardized, it must be acknowledged that cost is felt differently across different entities, and reconciliation of this premise is important to provide a clearer picture of the beneficiaries. Given the diagnosis-related group (DRG) payment structure for entitlement programs, higher charges due to lengthened inpatient stay of imported pancreas recipients may be felt more acutely by the hospital. Certainly, reduction in the need for diabetes management after pancreatic transplantation offers a savings opportunity for medical insurance [14–16]. Moreover, as upwards of 80%–90% of pancreas transplants are simultaneous pancreas-kidney transplantations (SPKs), decreasing waitlist times through importation has the potential to dramatically reduce societal burden by lowering the cost of dialysis for insurers [4,17].

METHODS

Study Population

This was a retrospective review of patients who received pancreas allografts at MMC, Bronx, NY. All patients ≥18 years of age who received either an SPK or pancreas after kidney transplantation (PAK) after January 1, 2014, were included in the study ($n = 28$). Postoperative clinical parameters, outcomes, and complications were assessed through chart review. MMC patients were compared with other regions with the use of the UNOS/Organ Procurement and Transplantation Network (OPTN) database which contained national data of transplants up to September 2016.

Regional waitlist times were calculated with the use of the UNOS Qualifying Date variable found in the UNOS/OPTN database. From the database, patients who received an SPK or PAK from January 1, 2014, to the latest date available, September 1, 2016, were compared with the MMC cohort. MMC transplants were excluded from the Region 9 cohort to compare the 2 groups more accurately.

Financial Data

MMC inpatient and operation charges, including standard acquisition cost (SAC) fees and transportation costs, for local and

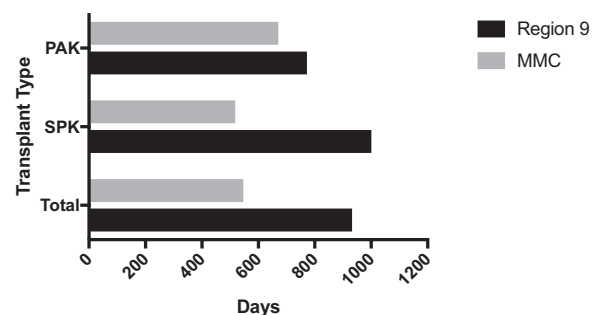


Fig 1. Comparison of median qualification days prior to transplant for patients at Montefiore Medical Center (MMC) versus United Network for Organ Sharing Region 9. Breakdown of total surgeries (simultaneous pancreas and kidney [SPK] and pancreas after kidney [PAK]), only PAK, and only SPK surgeries. Total: Region 9 median, 932 ($n = 100$); MMC median, 547 ($n = 28$); $P = .13$. SPK: Region 9 median, 1001 ($n = 65$); MMC median, 518 ($n = 23$); $P = .038$. PAK: Region 9 median, 772 ($n = 35$); MMC median, 671 ($n = 5$); $P = .78$.

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