

## Impact of damage on pancreas outcomes

### Cohort considered

All deceased pancreas donors in the UK between 1 January 2019 and 31 December 2019 where damage information was recorded by a recipient centre on the HTA-B form were considered. Patient outcomes were only considered for simultaneous pancreas and kidney (SPK) transplants due to numbers, with any cases of missing damage information not considered. Initial and three month graft function, and graft survival were considered for all SPK transplants where the information was available, and patient survival was restricted to first pancreas transplants only.

### Damage reported

**Table 1** shows the grade of damage for all pancreases retrieved between 1 January 2019 and 31 December 2019 by whether it was retrieved for whole use or islets, and whether it was transplanted. In total, there were 468 pancreases retrieved, with 363 retrieved for use as whole pancreas and 105 for islets. Overall, 441 had a grade of damage reported, and of those reported, 378 had no damage reported, 28 had mild damage, 7 moderate damage, and 28 severe damage. Of the 217 transplanted pancreases, 19 had damage reported.

Damage grade	Outcome		Total
	Not transplanted	Transplanted	
<b>RETRIEVED FOR WHOLE PANCREAS</b>			
None	116 (65%)	166 (90%)	<b>282 (78%)</b>
Mild	10 (6%)	11 (6%)	<b>21 (6%)</b>
Moderate	1 (1%)	6 (3%)	<b>7 (2%)</b>
Severe	28 (16%)	0	<b>28 (8%)</b>
Not performed	12 (7%)	0	<b>12 (3%)</b>
Not reported	11 (6%)	2 (1%)	<b>13 (4%)</b>
<b>Total whole pancreas</b>	<b>178 (100%)</b>	<b>185 (100%)</b>	<b>363 (100%)</b>
<b>RETRIEVED FOR ISLETS</b>			
None	66 (90%)	30 (94%)	<b>96 (91%)</b>
Mild	5 (7%)	2 (6%)	<b>7 (7%)</b>
Moderate	0	0	<b>0</b>
Severe	0	0	<b>0</b>
Not performed	1 (1%)	0	<b>1 (1%)</b>
Not reported	1 (1%)	0	<b>1 (1%)</b>
<b>Total islets</b>	<b>73 (100%)</b>	<b>32 (100%)</b>	<b>105 (100%)</b>
<b>OVERALL</b>			
None	182 (73%)	196 (90%)	<b>378 (81%)</b>
Mild	15 (6%)	13 (6%)	<b>28 (6%)</b>
Moderate	1 (0.4%)	6 (3%)	<b>7 (2%)</b>
Severe	28 (11%)	0	<b>28 (6%)</b>
Not performed	13 (5%)	0	<b>13 (3%)</b>
Not reported	12 (5%)	2 (1%)	<b>14 (3%)</b>
<b>Total</b>	<b>251 (100%)</b>	<b>217 (100%)</b>	<b>468 (100%)</b>

Of the 217 transplanted pancreases, 157 (72%) were used as part of a SPK transplant. **Table 2** shows the damage grade by transplant type for all transplanted pancreases. 16 of the 19 incidents of damage were reported for SPK transplants.

Damage grade	Pancreas only	Islets	Intestinal	Kidney & pancreas	Kidney & islets	Total
None	14	23	12	140	7	<b>196</b>
Mild	1	2	0	10	0	<b>13</b>
Moderate	0	0	0	6	0	<b>6</b>
Not reported	0	0	1	1	0	<b>2</b>
<b>Total</b>	<b>15</b>	<b>25</b>	<b>13</b>	<b>157</b>	<b>7</b>	<b>217</b>

### Patient outcomes

For patient outcomes, those with mild or moderate damage grouped together and compared to those with no damage for SPK recipients only. **Table 3** shows the initial graft function rates by whether or not damage was reported. In 17% of cases, initial graft function was not reported. Where it is reported, all those in the damage reported group all had immediate function. One patient in the no damage group had primary non-function and 3 had partial function. However, there was no significant difference in initial graft function rates by damage status where reported (Fisher's exact p-value >0.999).

Initial graft function	Pancreas damage		Total
	No damage reported	Damage reported	
Immediate function	111 (79%)	14 (88%)	<b>125 (80%)</b>
Partial function	3 (2%)	0	<b>3 (2%)</b>
Primary non-function	1 (1%)	0	<b>1 (1%)</b>
Not reported	25 (18%)	2 (13%)	<b>27 (17%)</b>
<b>Total</b>	<b>140 (100%)</b>	<b>16 (100%)</b>	<b>156 (100%)</b>

Similarly, **Table 4** shows the three month reported graft function rates by damage status. 22% did not have 3 month graft function reported. Where reported, most patients were insulin independent at 3 months, with 1 patient in the no damage group reported as having partial function. There was no significant difference in 3 month graft function rates by damage status where reported (Fisher's exact p-value >0.999).

**Table 4 Three month graft function following SPK transplant, by damage status, 1 January 2019 – 31 December 2019**

Three month graft function	Pancreas damage		Total
	No damage reported	Damage reported	
Insulin independent	107 (76%)	13 (81%)	120 (77%)
Partial function	1 (1%)	0	1 (1%)
No function	0	0	0
Not reported	32 (23%)	3 (19%)	35 (22%)
<b>Total</b>	<b>140 (100%)</b>	<b>16 (100%)</b>	<b>156 (100%)</b>

**Table 5** shows the graft survival rates for the cohort at 30 days and 1 year, where survival information is available, giving a cohort of 154 patients. The overall survival at 30 days was 99.4% (95% CI: 95.5-99.9) and was not significantly different between the two damage groups (log-rank p-value: 0.73). The 1 year survival rate for the cohort was 96.6% (95% CI: 92.0-98.6) and again, there was no significant difference between the two damage groups (log-rank p-value: 0.46).

**Table 5 Graft survival rates following SPK transplant, by damage status, 1 January 2019 – 31 December 2019**

Pancreas damage	Number of transplants	30 day survival rate (95% CI)	1 year survival rate (95% CI)
No damage reported	138	99.3 (95.0-99.9)	97.0 (92.1-98.9)
Damage reported	16	100 (-)	93.8 (63.2-99.1)
Log-rank p-value		0.7335	0.4591
<b>Overall</b>	<b>154</b>	<b>99.4 (95.5-99.9)</b>	<b>96.6 (92.0-98.6)</b>

**Table 6** shows the patient survival rates for the cohort, where survival information is available and for first pancreas transplants only, giving a cohort of 152 patients. At 30 days, there were no deaths reported in either group, and at 1 year, the overall patient survival rate was 99.2% (94.6-99.9), with no significant difference between the two groups (log-rank p-value: 0.76).

**Table 6 Patient survival rates following first SPK transplant, by damage status, 1 January 2019 – 31 December 2019**

Pancreas damage	Number of transplants	30 day survival rate (95% CI)	1 year survival rate (95% CI)
No damage reported	136	100 (-)	99.2 (94.2-99.9)
Damage reported	16	100 (-)	100 (-)
Log-rank p-value		-	0.7508
<b>Overall</b>	<b>152</b>	<b>100 (-)</b>	<b>99.2 (94.7-99.9)</b>

**Summary**

In 2019, 63 (13%) pancreases retrieved had some degree of damage reported, with 28 having severe damage recorded. 19 of these 63 pancreases were transplanted, mostly into SPK recipients. When looking at SPK patient outcomes, there was no significant difference between those with damage and those with no damage in initial graft function and graft function at 3 months. There was also no significant difference in 30 day and 1 year graft and patient survival between the two groups. This suggests there is no negative impact on patient outcomes if the pancreas has had retrieval damage, but is based on small numbers so should be interpreted with caution.