Supplementary Figures

Figures S1-S6: Forest plots for recipient baseline characteristics in meta-analysis

Figure S1: Age

Ot	••	sc	T-4-1		IR	T -4-1	147-1-1-4	Mean difference	Mean difference
Study or Subgroup	Mean	SD	Total	Mean	SD	Total	weight	IV, Random, 95% CI	IV, Random, 95% CI
R Hummel at al	50.9	12.2	8	46.6	14.3	7	2.0%	4.30 [-9.25 , 17.85]	
D Livingston et al	51.5	13.3	22	52.7	10.7	82	10.1%	-1.20 [-7.22 , 4.82]	+
M Vivarelli et al	49.5	14.41	64	49.51	11.85	56	16.6%	-0.01 [-4.71 , 4.69]	+
CE Oberkofler et al	52.5	11.91	111	53.25	4.9	428	71.4%	-0.75 [-3.01 , 1.51]	•
Total (95% CI)			205			573	100.0%	-0.57 [-2.48 , 1.34]	•
Heterogeneity: Tau ² =	0.00; Chi ² :	= 0.62, df	= 3 (P =	0.89); I ² = 0	0%				1
Test for overall effect:	Z = 0.59 (P	= 0.56)							100 -50 0 50 100
Test for subgroup diffe	erences: No	t applicat	ole						SC IR

Figure S2: Gender

	so	2	IR	R		Odds ratio	Odds ratio
Study or Subgroup	Events	Total	Events	Total	Weight	M-H, Random, 95% CI	M-H, Random, 95% CI
R Hummel at al	6	8	7	7	1.2%	0.17 [0.01 , 4.31]	—
D Livingston et al	14	22	57	82	12.4%	0.77 [0.29 , 2.06]	
M Vivarelli et al	45	64	41	56	19.1%	0.87 [0.39 , 1.93]	
CE Oberkofler et al	65	111	261	428	67.3%	0.90 [0.59 , 1.38]	•
Total (95% CI)		205		573	100.0%	0.86 [0.61 , 1.22]	•
Total events:	130		366				1
Heterogeneity: Tau ² =	0.00; Chi ²	= 1.06, d	f = 3 (P = 0	0.79); I ² =	: 0%		0.01 0.1 1 10 100
Test for overall effect:	Z = 0.84 (F	P = 0.40)					SC IR
Test for subgroup diffe	erences: No	ot applica	ble				

Figure S3: BMI

Ctt Ct.		sc	T-4-1		IR	T-4-1	147-1-1-4	Mean difference		Mean di		
Study or Subgroup	Mean	SD	Total	Mean	SD	Total	weignt	IV, Random, 95% CI		IV, Rando	n, 95% Ci	
R Hummel at al	23.5	3	8	27.4	3.7	7	7.1%	-3.90 [-7.34 , -0.46]	l			
D Livingston et al	25.7	5.5	22	26.3	5.2	82	11.8%	-0.60 [-3.16 , 1.96]	1			
M Vivarelli et al	24.16	3.63	64	25.49	4.9	56	23.8%	-1.33 [-2.89, 0.23]	1			
CE Oberkofler et al	25.1	1.4	111	25.55	2	428	57.3%	-0.45 [-0.77 , -0.13]	l	•		
Total (95% CI)			205			573	100.0%	-0.92 [-1.90 , 0.05]	l			
Heterogeneity: Tau ² =	0.41; Chi ² :	= 4.93, df	= 3 (P =	0.18); I ² = 3	39%							
Test for overall effect:	Z = 1.85 (P	= 0.06)							-100	-50	50	100
Test for subgroup diffe	erences: No	t applicat	ole						.00	sc	IR .	.00

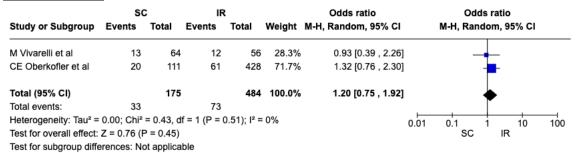
Figure S4: MELD

		sc			IR			Mean difference	Mean difference
Study or Subgroup	Mean	SD	Total	Mean	SD	Total	Weight	IV, Fixed, 95% CI	IV, Fixed, 95% CI
R Hummel at al	22.7	11.7	8	16.5	9.5	7	0.9%	6.20 [-4.54 , 16.94]	
D Livingston et al	19.6	9.7	22	19.6	9.7	82	5.2%	0.00 [-4.56 , 4.56]	
M Vivarelli et al	22.75	10.68	64	18.75	7.8	56	9.8%	4.00 [0.68 , 7.32]	
CE Oberkofler et al	25	5.2	111	22.75	6.3	428	84.0%	2.25 [1.11 , 3.39]	•
Total (95% CI)			205			573	100.0%	2.34 [1.30 , 3.38]	•
Heterogeneity: Chi2 =	2.49, df = 3	(P = 0.4)	8); I ² = 0%	, 0					l'
Test for overall effect:	•		,						-20 -10 0 10 20
Test for subgroup diffe	erences: No	t applicat	oie						SC IR

Figure S5: Re-transplantations

	so		IR			Odds ratio	Odds ratio
Study or Subgroup	Events	Total	Events	Total	Weight	IV, Fixed, 95% CI	IV, Fixed, 95% CI
R Hummel at al	3	8	3	7	2.8%	0.80 [0.10 , 6.35]	
D Livingston et al	10	22	45	82	13.3%	0.69 [0.27, 1.76]	
M Vivarelli et al	16	64	14	56	17.3%	1.00 [0.44, 2.29]	
CE Oberkofler et al	54	111	147	428	66.6%	1.81 [1.19 , 2.76]	•
Total (95% CI)		205		573	100.0%	1.40 [0.99 , 1.98]	•
Total events:	83		209				ľ
Heterogeneity: Chi ² =	4.54, df = 3	3 (P = 0.2	21); I ² = 34 ⁴	%			0.01 0.1 1 10 100
Test for overall effect:	Z = 1.93 (F	P = 0.05					SC IR
Test for subgroup diffe	erences: No	ot applica	ble				

Figure S6: TACE

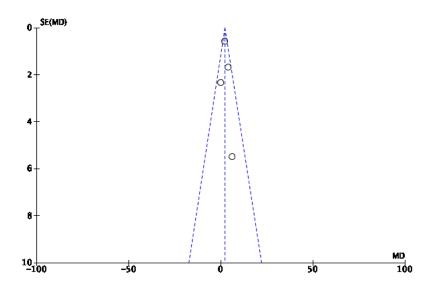


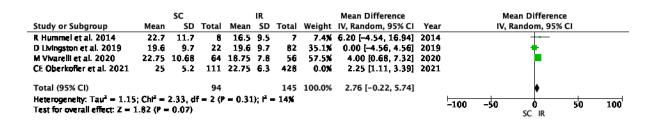
Figures S7-S12: Sensitivity Analysis

S7: Recipient MELD

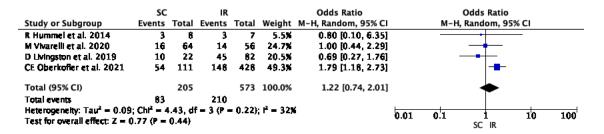
	SC SD Texal				IR		Mean Difference				M	ean Differen	ce	
Study or Subgroup	Mean	SD	Total	Mean	SD	Total	Weight	IV, Random, 95% CI	Year		IV,	Random, 95%	6 CI	
R Hummel et al. 2014	22.7	11.7	8	16.5	9.5	7	0.9%	6.20 [-4.54, 16.94]	2014			+		
D Livingston et al. 2019	19.6	9.7	22	19.6	9.7	82	5.2%	0.00 [-4.56, 4.56]	2019			+		
M Vivarelli et al. 2020	22.75	10.68	64	18.75	7.8	56	9.8%	4.00 [0.68, 7.32]	2020			-		
CE Oberkoffer et al. 2021	25	5.2	111	22.75	6.3	428	84.0%	2.25 [1.11, 3.39]	2021			-		
Total (95% CI)			205			573	100.0%	2.34 [1.30, 3.38]						
Heterogeneity: $Tau^2 = 0.00$ Test for overall effect: $Z = 4$				- 0.46	3); ř ·	- 0%				-100	-50	SC IR	50	100

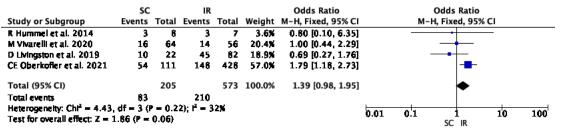
		sc			IR			Mean Difference			М	ean Differen	ice	
Study or Subgroup	Mean	SD	Total	Mean	SD	Total	Weight	IV, Fixed, 95% CI	Year		IV	, Fixed, 95%	CI	
R Hummel et al. 2014	22.7	11.7	8	16.5	9.5	7	0.9%	6.20 [-4.54, 16.94]	2014			+		
D Livingston et al. 2019	19.6	9.7	22	19.6	9.7	82	5.2%	0.00 [-4.56, 4.56]	2019			+		
M Vivarelli et al. 2020	22.75	10.68	64	18.75	7.8	56	9.8%	4.00 [0.68, 7.32]	2020			-		
CE Oberkoffer et al. 2021	25	5.2	111	22.75	6.3	428	84.0%	2.25 [1.11, 3.39]	2021			-		
Total (95% CI)			205			573	100.0%	2.34 [1.30, 3.38]						
Heterogeneity: $Cht^2 = 2.49$, Test for overall effect: $Z = 4$				0%						-100	-50	SC IR	50	100

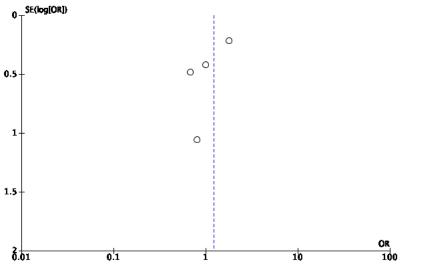




S8: Retransplantation





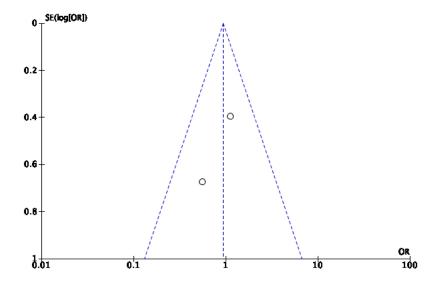


	sc		IR			Odds Ratio			Odds Ratio		
Study or Subgroup	Events	Total	Events	Total	Weight	M-H, Random, 95% CI		M-H	l, Random, 9	5% CI	
R Hummel et al. 2014	3	8	3	7	8.3%	0.80 [0.10, 6.35]					
M Vivarelli et al. 2020	16	64	14	56	51.9%	1.00 [0.44, 2.29]			-		
D Livingston et al. 2019	10	22	45	82	39.8%	0.69 [0.27, 1.76]					
CE Oberkoffer et al. 2021	54	111	148	428	0.0%	1.79 [1.18, 2.73]					
Total (95% CI)		94		145	100.0%	0.84 [0.47, 1.53]			•		
Total events	29		62								
Heterogeneity: $Tau^2 = 0.00$ Test for overall effect: $Z = 0$			f = 2 (P ·	= 0.84)	; l² = 0%		0.01	0.1	SC IR	10	100

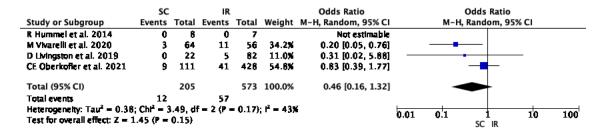
S9: Early occlusions

	sc		IR			Odds Ratio			Odds Ratio		
Study or Subgroup	Events	Total	Events	Total	Weight	M-H, Random, 95% CI		M-H	, Random, 9	5% CI	
R Hummel et al. 2014	0	8	0	7		Not estimable					
M Vivarelli et al. 2020	4	64	6	56	25.6%	0.56 [0.15, 2.08]		_	-		
D Livingston et al. 2019	0	22	0	82		Not estimable					
CE Oberkoffer et al. 2021	9	111	31	428	74.4%	1.13 [0.52, 2.45]			_		
Total (95% CI)		205		573	100.0%	0.94 [0.48, 1.84]			•		
Total events	13		37								
Heterogeneity: $Tau^2 = 0.00$ Test for overall effect: $Z = 0$			f = 1 (P •	- 0.36)	; I² = 0%		0.01	0.1	SC IR	10	100

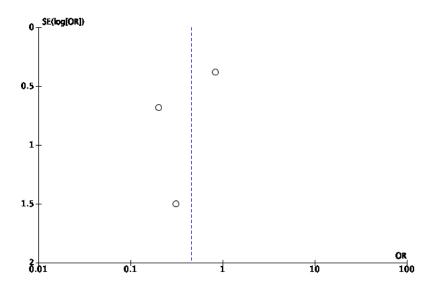
	SC		IR			Odds Ratio			Odds Ratio		
Study or Subgroup	Events	Total	Events	Total	Weight	M-H, Fixed, 95% CI		M-	H, Fixed, 95%	í CI	
R Hummel et al. 2014	0	8	0	7		Not estimable					
M Vivarelli et al. 2020	4	64	6	56	33.8%	0.56 [0.15, 2.08]		_	-		
D Livingston et al. 2019	0	22	0	82		Not estimable					
CE Oberkoffer et al. 2021	9	111	31	428	66.2%	1.13 [0.52, 2.45]			-		
Total (95% CI)		205		573	100.0%	0.94 [0.48, 1.83]			•		
Total events	13		37								
Heterogeneity: $Chi^2 = 0.83$ Test for overall effect: $Z = 0$			6);)%			0.01	0.1	1 SC IR	10	100



S10: Late occlusions



	SC		IR			Odds Ratio			Odds Ratio		
Study or Subgroup	Events	Total	Events	Total	Weight	M-H, Fixed, 95% CI		M-	H, Fixed, 95%	6 CI	
R Hummel et al. 2014	0	8	0	7		Not estimable					
M Vivarelli et al. 2020	3	64	11	56	38.5%	0.20 [0.05, 0.76]		_			
D Livingston et al. 2019	0	22	5	82	8.0%	0.31 [0.02, 5.88]	_		•	_	
CE Oberkoffer et al. 2021	9	111	41	428	53.4%	0.83 [0.39, 1.77]			_		
Total (95% CI)		205		573	100.0%	0.55 [0.29, 1.04]			•		
Total events	12		57								
Heterogeneity: $Chi^2 = 3.49$, Test for overall effect: $Z = 1$			7); i² = 4	13 %			0.01	0.1	SC IR	10	100

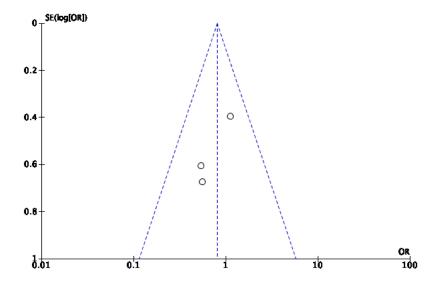


	sc		IR			Odds Ratio		О	dds Ratio		
Study or Subgroup	Events	Total	Events	Total	Weight	M-H, Random, 95% CI		M-H, R	andom, 95	% CI	
R Hummel et al. 2014	0	8	0	7		Not estimable					
M Vivarelli et al. 2020	3	64	11	56	82.9%	0.20 [0.05, 0.76]					
D Livingston et al. 2019	0	22	5	82	17.1%	0.31 [0.02, 5.88]		-		_	
CE Oberkoffer et al. 2021	9	111	41	428	0.0%	0.83 [0.39, 1.77]					
Total (95% CI)		94		145	100.0%	0.22 [0.06, 0.73]			-		
Total events	3		16								
Heterogeneity: $Tau^2 = 0.00$ Test for overall effect: $Z = 2$			f = 1 (P ·	= 0.79)	; r² = 0%		0.01	0.1	SC IR	10	100

S11: Early Allograft Dysfunction (EAD)

	sc		IR			Odds Ratio			Odds Ratio		
Study or Subgroup	Events	Total	Events	Total	Weight	M-H, Random, 95% CI		M-H	, Random, 9	5% CI	
R Hummel et al. 2014	0	8	0	7		Not estimable					
M Vivarelli et al. 2020	4	64	6	56	19.4%	0.56 [0.15, 2.08]		_	-		
D Livingston et al. 2019	4	22	24	82	24.1%	0.54 [0.16, 1.75]		_	-		
CE Oberkoffer et al. 2021	9	111	31	428	56.5%	1.13 [0.52, 2.45]			+		
Total (95% CI)		205		573	100.0%	0.82 [0.46, 1.47]			•		
Total events	17		61								
Heterogeneity: $Tau^2 = 0.00$ Test for overall effect: $Z = 0$			f = 2 (P •	= ().47)	; i² = 0%		0.01	0.1	SC IR	10	100

	SC		IR			Odds Ratio		(Odds Ratio		
Study or Subgroup	Events	Total	Events	Total	Weight	M-H, Fixed, 95% CI		M-H	, Fixed, 95%	CI	
R Hummel et al. 2014	0	8	0	7		Not estimable					
M Vivarelli et al. 2020	4	64	6	56	23.0%	0.56 [0.15, 2.08]			-		
D Livingston et al. 2019	4	22	24	82	31.9%	0.54 [0.16, 1.75]			-		
CE Oberkoffer et al. 2021	9	111	31	428	45.1%	1.13 [0.52, 2.45]			+		
Total (95% CI)		205		573	100.0%	0.81 [0.45, 1.45]			•		
Total events	17		61								
Heterogeneity: $Chi^2 = 1.49$ Test for overall effect: $Z = 0$			7); t² = ()%			0.01	0.1	SC IR	10	100

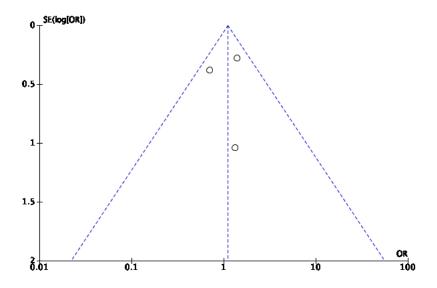


	sc		IR			Odds Ratio		Od	ds Ratio		
Study or Subgroup	Events	Total	Events	Total	Weight	M-H, Random, 95% CI		M-H, Ra	ndom, 95	5% CI	
R Hummel et al. 2014	0	8	0	7		Not estimable					
M Vivarelli et al. 2020	4	64	6	56	44.6%	0.56 [0.15, 2.08]					
D Livingston et al. 2019	4	22	24	82	55.4%	0.54 [0.16, 1.75]					
CE Oberkoffer et al. 2021	9	111	31	428	0.0%	1.13 [0.52, 2.45]					
Total (95% CI)		94		145	100.0%	0.55 [0.23, 1.32]		⋖			
Total events	8		30								
Heterogeneity: $Tau^2 = 0.00$ Test for overall effect: $Z = 1$			f = 1 (P •	= 0.97)	; i² = 0%		0.01	0.1	SC IR	10	100

S12: Biliary complications

	sc		IR			Odds Ratio			Odds Ratio		
Study or Subgroup	Events	Total	Events	Total	Weight	M-H, Random, 95% CI		M-H	, Random, 95	% CI	
R Hummel et al. 2014	4	8	3	7	5.1%	1.33 [0.17, 10.25]		_	-		
M Vivarelli et al. 2020	20	64	22	56	34.5%	0.70 [0.33, 1.49]					
D Livingston et al. 2019	0	0	0	0	0.0%	0.54 [0.16, 1.75]					
CE Oberkoffer et al. 2021	21	111	61	428	60.3%	1.40 [0.81, 2.43]			+		
Total (95% CI)		183		491	100.0%	1.10 [0.69, 1.76]			•		
Total events	45		86								
Heterogeneity: $Tau^2 = 0.02$ Test for overall effect: $Z = 0$			f = 2 (P ·	= 0.34)	; i² = 7%		0.01	0.1	1 SC IR	10	100

	sc		IR			Odds Ratio			Odds Ratio		
Study or Subgroup	Events	Total	Events	Total	Weight	M-H, Fixed, 95% CI		M-	H, Fixed, 95%	CI	
R Hummel et al. 2014	4	8	3	7	4.2%	1.33 [0.17, 10.25]		_			
M Vivarelli et al. 2020	20	64	22	56	42.3%	0.70 [0.33, 1.49]					
D Livingston et al. 2019	0	0	0	0	0.0%	0.54 [0.16, 1.75]					
CE Oberkoffer et al. 2021	21	111	61	428	53.5%	1.40 [0.81, 2.43]			+		
Total (95% CI)		183		491	100.0%	1.10 [0.71, 1.71]			•		
Total events	45		86								
Heterogeneity: $Chi^2 = 2.16$, Test for overall effect: $Z = 0$			4); f² = 7	*			0.01	0.1	SC IR	10	100



	sc		IR			Odds Ratio			Odds Ratio		
Study or Subgroup	Events	Total	Events	Total	Weight	M-H, Random, 95% CI		M-H	l, Random, 9	5% CI	
R Hummel et al. 2014	4	8	3	7	12.0%	1.33 [0.17, 10.25]		_	-		
M Vivarelli et al. 2020	20	64	22	56	88.0%	0.70 [0.33, 1.49]			_		
D Livingston et al. 2019	0	0	0	0	0.0%	0.54 [0.16, 1.75]					
CE Oberkoffer et al. 2021	21	111	61	428	0.0%	1.40 [0.81, 2.43]					
Total (95% CI)		72		63	100.0%	0.76 [0.37, 1.54]			•		
Total events	24		25								
Heterogeneity: $Tau^2 = 0.00$ Test for overall effect: $Z = 0$			f = 1 (P ·	- 0.56)	; I ² = 0%		0.01	0.1	1	10	100
rest for overall effect. L =	V.11 \r =	V.77,							SC IR		