Supplementary Table 1 Heterogeneity in creatinine measurement timing across studies

Ref.	Creatinine metric	Timing of measurement	Endpoint type	AKI (KDIGO)	AKI results	RRT
Fayed 2016 (RCT; *n* = 40)	Serial creatinine (mg/dL)	Pre-op, immediate post-op, POD 1, 3, 5	Fixed timepoints	Not reported	Not reported	Not reported
Zhang 2021 (Retrospective; *n* = 54)	Peak creatinine (μmol/L)	Within first 7 days post-LT	Composite peak	Yes	No significant difference	Not reported
Zhang 2022 (PSM cohort; *n* = 121)	Peak creatinine (μmol/L)	Within first 7 days post-LT	Composite peak	Yes	No significant difference	Not reported
Yang 2024 (RCT; *n* = 330)	Serial creatinine (μmol/L)	Serial perioperative (graphical reporting)	Not extractable as single timepoint	Yes	30.0% vs 37.5% (*P* = 0.16)	Not reported

reatinine measurement varied across studies, including fixed serial timepoints and peak values within 7 days. This heterogeneity limits direct comparability and interpretation of pooled estimates. AKI: acute kidney injury; KDIGO: Kidney Disease: Improving Global Outcomes; LT: liver transplantation; POD: postoperative day; PSM: propensity score matching; RCT: randomized controlled trial; RRT: renal replacement therapy.

Supplementary Table 2 Adjustment strategies and confounding control

Ref.	Study design	Creatinine analysis	Adjustment method	Key confounders reported
Fayed 2016 (RCT; *n* = 40)	Randomized controlled trial	Unadjusted group means	Randomization	Warm ischemia time balanced
Zhang 2021 (Retrospective; *n* = 54)	Retrospective cohort	Unadjusted group means	None for creatinine (regression for HIRI only)	Warm ischemia time imbalance (p=0.004)
Zhang 2022 (PSM cohort; *n* = 121)	Retrospective cohort with PSM	Unadjusted group means post-PSM	Propensity score matching	Warm ischemia time balanced after PSM
Yang 2024 (RCT; *n* = 330)	Randomized controlled trial	Unadjusted group means	Randomization (intention-to-treat)	Perioperative variables comparable

Pooled creatinine estimates were derived from unadjusted group-level data across all studies. Residual confounding may persist in observational studies. HIRI, hepatic ischemia-reperfusion injury; PSM, propensity score matching; RCT, randomized controlled trial.

Supplementary Table 3 Baseline renal function reporting

Ref.	Baseline creatinine reported	Baseline comparability	eGFR/CKD staging	Renal exclusion criteria
Fayed 2016 (RCT; *n* = 40)	Yes (0.90 vs 0.95 mg/dL)	Balanced (p=0.40)	Not reported	No explicit CKD exclusion
Zhang 2021 (Retrospective; *n* = 54)	Not clearly reported	Not assessable	Not reported	Not reported
Zhang 2022 (PSM cohort; *n* = 121)	Not clearly reported	Not assessable	Not reported	Not reported
Yang 2024 (RCT; *n* = 330)	Yes (66 vs 61 μmol/L)	Comparable	Not reported	Severe renal dysfunction excluded

Baseline renal function was inconsistently reported, limiting assessment of preoperative comparability across studies. CKD, chronic kidney disease; eGFR, estimated glomerular filtration rate; PSM, propensity score matching; RCT, randomized controlled trial.

Supplementary Table 4 Secondary renal outcomes (AKI and RRT)

Ref.	AKI definition	AKI reported	AKI results	RRT reported
Fayed 2016 (RCT; *n* = 40)	Not defined	No	Not reported	Not reported
Zhang 2021 (Retrospective; *n* = 54)	KDIGO	Yes	14.3% vs 7.7% (P = 0.670)	Not reported
Zhang 2022 (PSM cohort; *n* = 121)	KDIGO	Yes	2.9% vs 2.9% (P = 1.000)	Not reported
Yang 2024 (RCT; *n* = 330)	KDIGO	Yes	30.0% vs 37.5% (P = 0.16)	Not reported

AKI was reported in three studies using KDIGO criteria, with no statistically significant differences observed. Renal replacement therapy was not reported in any included study. AKI, acute kidney injury; KDIGO, Kidney Disease: Improving Global Outcomes; PSM, propensity score matching; RCT, randomized controlled trial; RRT, renal replacement therapy.