

POWER: A single-center, pilot, prospective, randomized clinical study of hypothermic oxygenated perfusion with or without adsorption of histologically evaluated kidneys retrieved from older/marginal donors

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Introduction

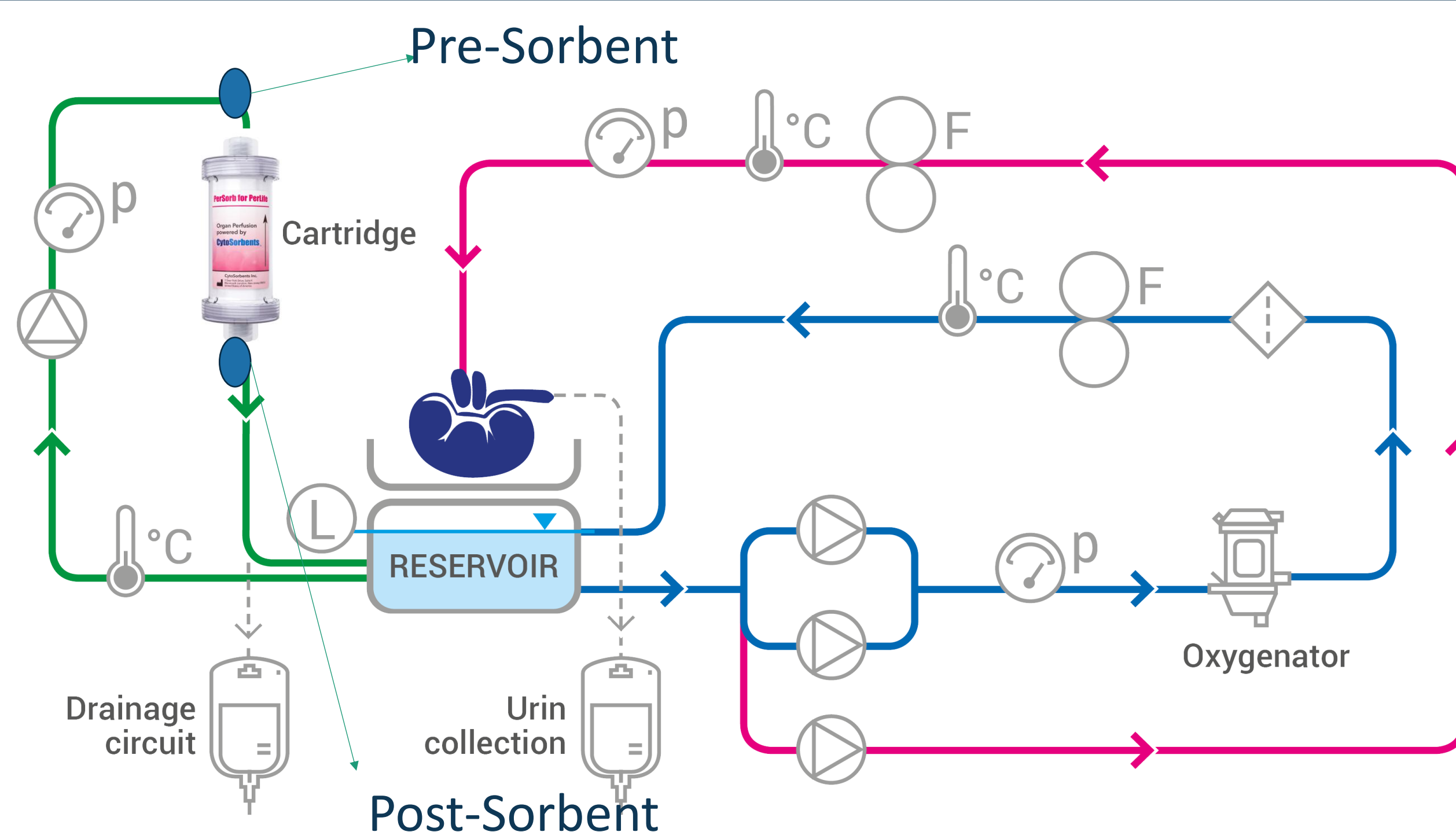
Hypothermic perfusion of older/marginal kidneys reduces oxidative stress and renal parenchymal resistances, a treatment effect taken as a potential predictor of improved post-transplant function recovery of kidney grafts from marginal donors. We aimed to test whether removal of proinflammatory cytokines, prostaglandins, complement components and other mediators of reperfusion injury by hemo-adsorption during hypothermic perfusion might improve renal vascular resistances in histologically evaluated kidneys from older/marginal donors.

Methods

This pilot, randomized, single-center study evaluated the adsorption of mediators of oxidative stress (GST, LDH, and free lactate), AKI (NGAL, KIM-1, endothelin, and pro-adrenomedullin), inflammatory cytokines (IL-6, IL-10 and TNF- α), along with amelioration of renal vascular resistance in 5 kidney transplants from marginal donors perfused with the Integrated PerLife[®] system combined with the PerSorb sorbent compared to five marginal kidney transplants perfused without adsorption. Primary outcome: amelioration of RVR in the adsorption compared to non-adsorption group along with safety evaluation of the adsorption procedure. The relationship between pre-implantation histological score and treatment effect on renal vascular resistances will also be evaluated. The study should be completed in approximately 24 months.

Results

From October 2024 to June 2025, three couples of kidneys from three marginal donors were included in the study and perfused: one in the adsorption group and two in the control group. One additional couple of kidneys was randomized but not perfused for technical reasons (drop-out).



Conclusions

Adsorption with the PerSorb[®] cartridge during hypothermic perfusion should safely ameliorate renal vascular resistances of marginal kidneys, a treatment effect that could reflect amelioration/prevention of kidney reperfusion injury and eventually predict improved post-transplant renal function recovery.