

Table S1. Antibiotic administration.

Antibiotics	Lac group n = 26	Placebo group n = 26
Third-generation cephalosporins, N (%)	3 (11.54)	2 (7.69)
Carbapenems, N (%)	0	4 (15.38)
Combination use of antibiotics, N (%)	0	3 (11.54)

Table S2. AGI grading system.

AGI Grade	Description	Symptoms and Signs
AGI Grade I: Gastrointestinal Dysfunction	Mild gastrointestinal dysfunction with non-specific symptoms, generally improves with routine treatment.	- Delayed gastric emptying (nausea, vomiting) - Decreased bowel sounds - Bloating or mild abdominal distension - Mild constipation or diarrhea
AGI Grade II: Gastrointestinal Failure	Worsened dysfunction with more severe symptoms requiring medical intervention.	- Persistent vomiting, diarrhea, or constipation - Severe abdominal distension with reduced/absent bowel sounds - Increased gastric aspirate via nasogastric tube - Inability to tolerate enteral feeding - Marked delay in gastric emptying
AGI Grade III: Gastrointestinal Failure, Life-Threatening	Life-threatening gastrointestinal failure that could lead to multiple organ dysfunction.	- Severe abdominal distension (possibly with increased intra-abdominal pressure) - Paralytic ileus or complete obstruction - Intestinal ischemia (bleeding, necrosis) - Peritoneal irritation (abdominal pain, tenderness) - Requires decompression or surgery
AGI Grade IV: Irreversible Gastrointestinal Failure	Irreversible gastrointestinal damage with a high risk of mortality.	- Irreversible gastrointestinal failure - Severe bowel obstruction, necrosis, or perforation - Markedly elevated intra-abdominal pressure (abdominal compartment syndrome) - Widespread intestinal ischemia and necrosis

Table S3. Additive Cardiac Surgery Score (CASUS).

	0 Point	1 Point	2 Points	3 Points	4 Points
PaO ₂ /FiO ₂ (mmHg/%)	Extubated	>250	151-250	75-150	<75
Serum creatinine (mg/dL)	<1.2	1.2-2.2	2.3-4	4.1-5.5	>5.5
Serum bilirubin (mg/dL)	<1.2	1.2-3.5	3.6-7.0	7.1-14	>14
PAR=HR* CVP / MAP	<10	10.1-15.0	15.1-20	20.1-30	>30
Lactic acid (mmol/L)	<2.1	2.1-4.0	4.1-8.0	8.1-12	>12
Platelets x 10 ⁹ /L	>120	81-120	51-80	21-50	<21
Neurologic state	Normal	-	Confused	Sedated	Diffuse neuropathy
Intra-aortic balloon pump (IABP)	No	-	-	-	Yes
Ventricular assist device (VAD)	No	-	-	-	Yes
CVVH/dialysis	No	-	-	-	Yes

PAR, pressure adjusted heart rate; HR, heart rate; CVP, central venous pressure; MAP, mean arterial pressure; CVVH, continuous veno-venous hemofiltration; PaO₂/FiO₂, the ratio of arterial partial pressure of oxygen (PaO₂) to the fractional concentration of inspired oxygen (FiO₂).