

Organ donation

A brief outline for the FRCS

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Outline



- Types of deceased donors
- The definition and diagnosis of death
- The retrieval procedure
- The types of ischaemia during organ retrieval and implantation

Types of donors



- Donation after brainstem death (DBD)
- Donation after circulatory death (DCD)

Definition of death



ACADEMY OF
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A CODE OF PRACTICE FOR
THE DIAGNOSIS AND
CONFIRMATION OF DEATH



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Definition of death



Death entails the irreversible loss of those essential characteristics which are necessary to the existence of a living human person

Definition of death



Death entails the irreversible loss of those essential characteristics which are necessary to the existence of a living human person

- Irreversible loss of the capacity for consciousness
- Irreversible loss of the capacity to breathe

Different types of death?



Types of donation



- Donation after brain *determination* of death
- Donation after circulatory *determination* of death

Donation after brain determination of death (DBD)



- Due to intracranial (ICH) or extracranial (e.g. hypoxia) events
- Irreversible loss of capacity for consciousness alone is not sufficient (e.g. vegetative state)
- The loss of integrated biological function will inevitably lead to deterioration and organ necrosis within a short time

Process for brain determination of death



- Evidence for irreversible brain damage of known aetiology
- Exclusion of reversible causes of coma and apnoea
- Tests for brainstem function
 - Brainstem reflexes: pain, corneal, pupillary, oculovestibular, pharyngeal and laryngeal reflex
 - Apnoea test: No respiratory efforts after disconnection from ventilator (but with ongoing oxygenation)

Brainstem testing should be repeated twice by two intensivists, at least one of whom is a consultant

Donation after circulatory determination of death (DCD)



- Futility of treatment recognised
- Withdrawal of support
- Confirmation of death
 - ▣ Absence of central pulse
 - ▣ Absence of heart sounds
 - ▣ Asystole on continuous ECG
 - ▣ Absence of pulsatile flow on arterial monitoring
- Continuous monitoring for 5 minutes (any spontaneous return of activity resets the clock!)

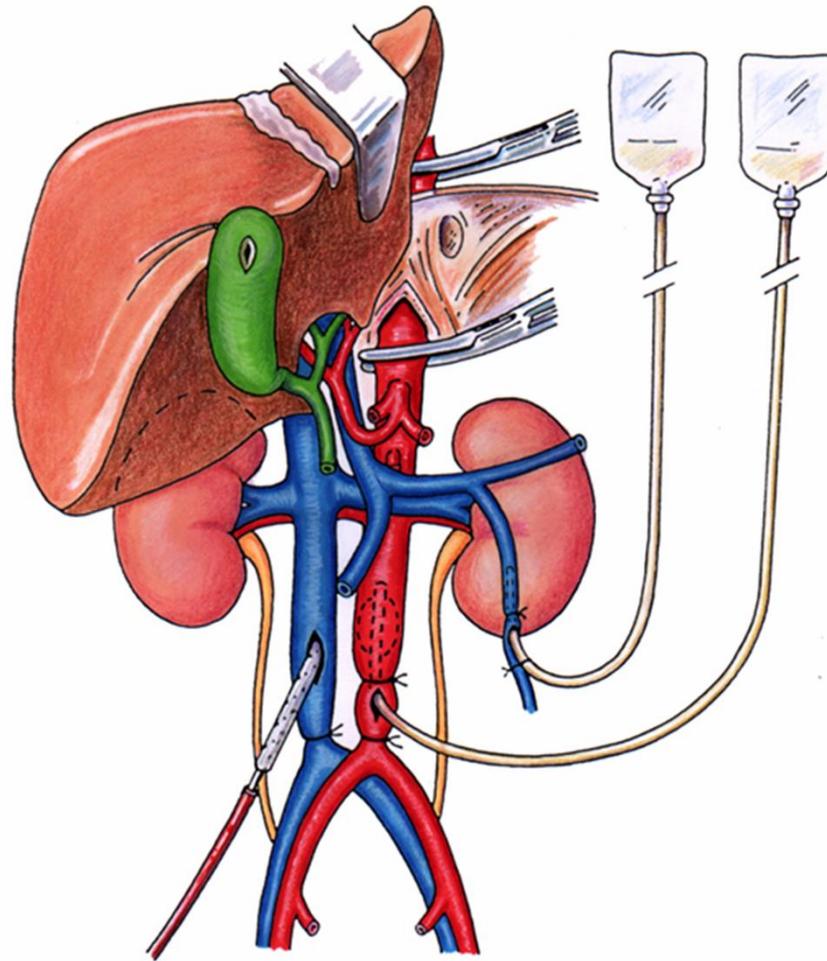
Confirmation of death in DCD

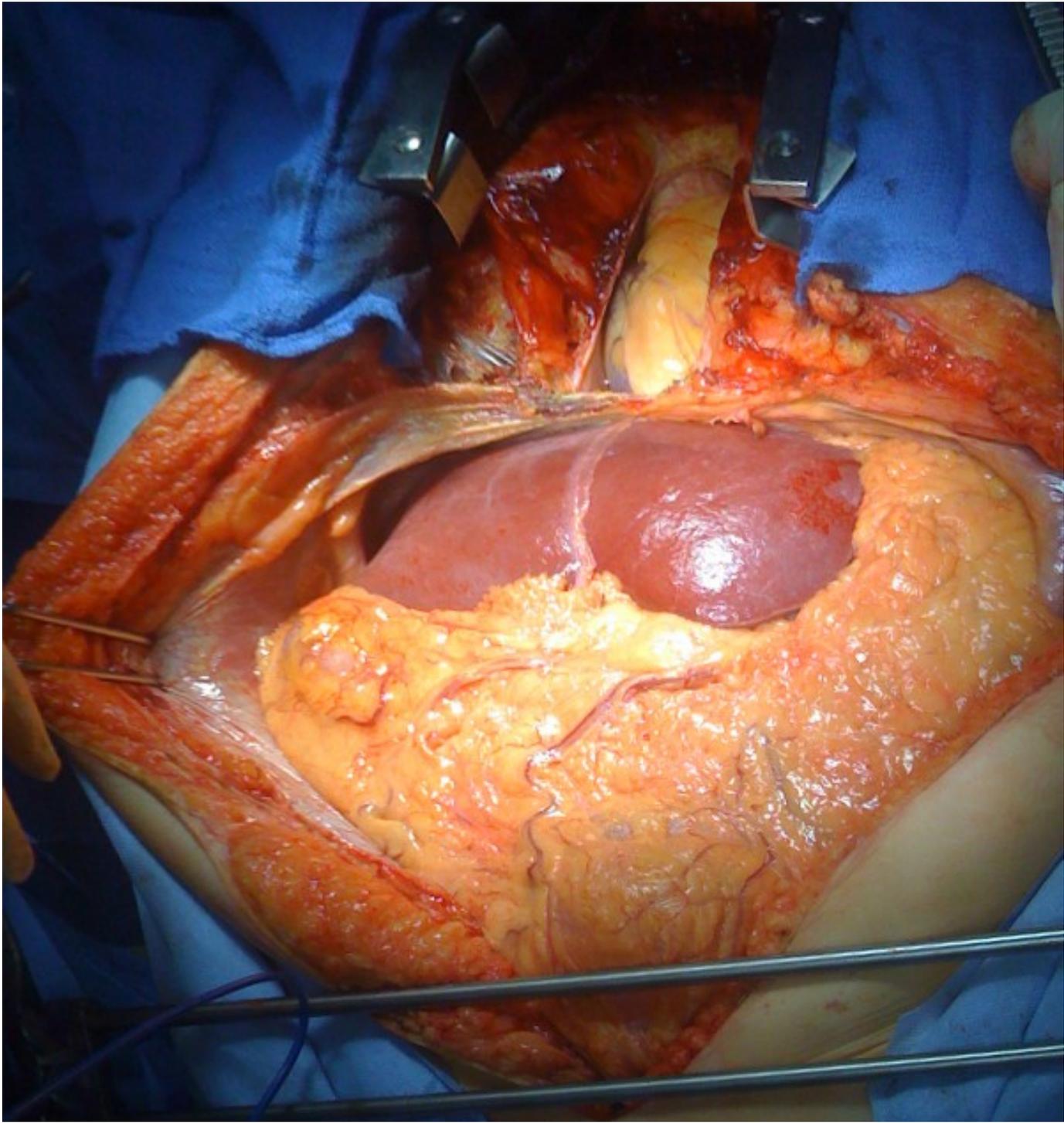
Country	No-touch time (minutes)
Austria	10
Belgium	5
France	5
Italy	20
Latvia	15
The Netherlands	5
Spain	5
Switzerland	10
UK	5
USA	2

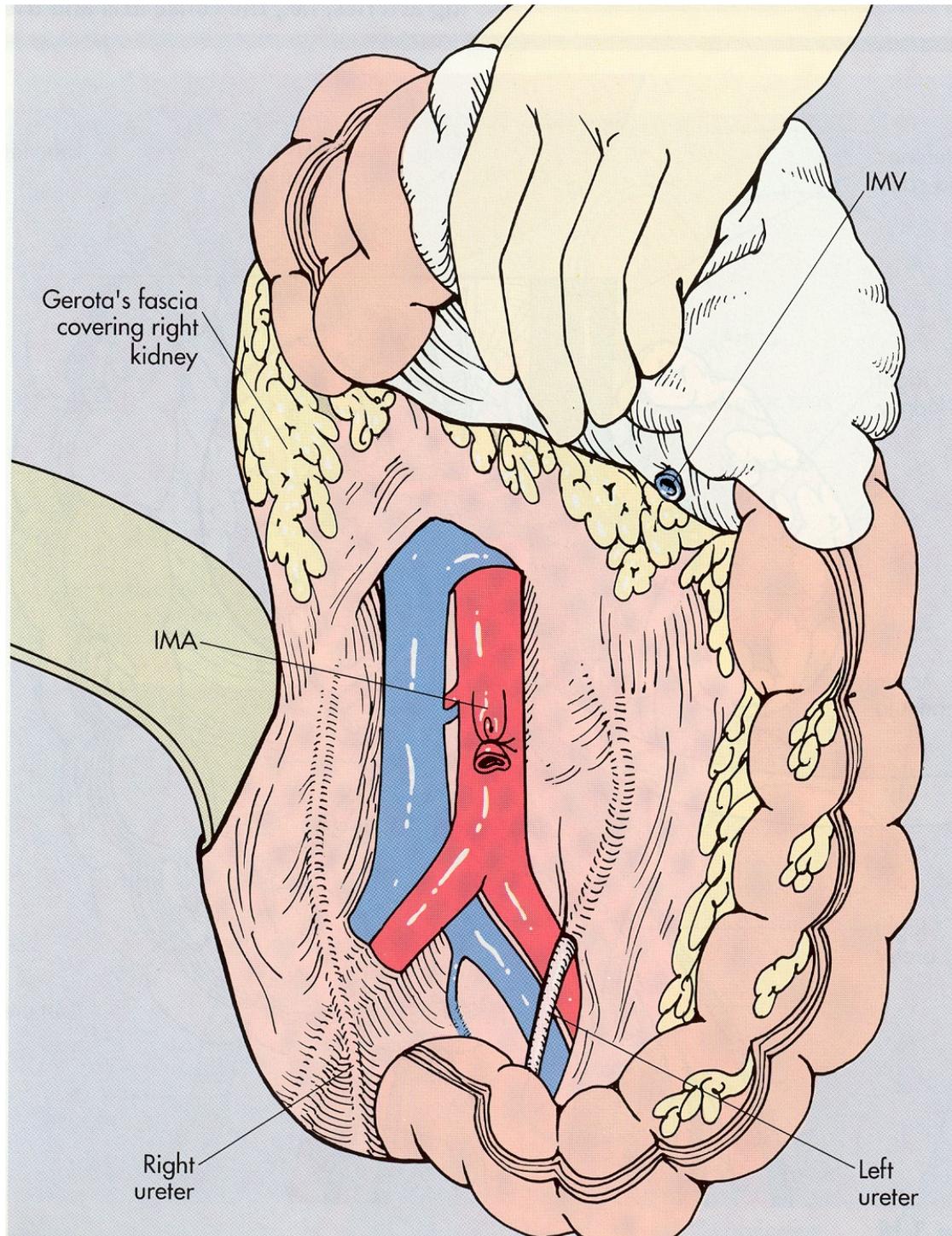
Maastricht classification of DCD

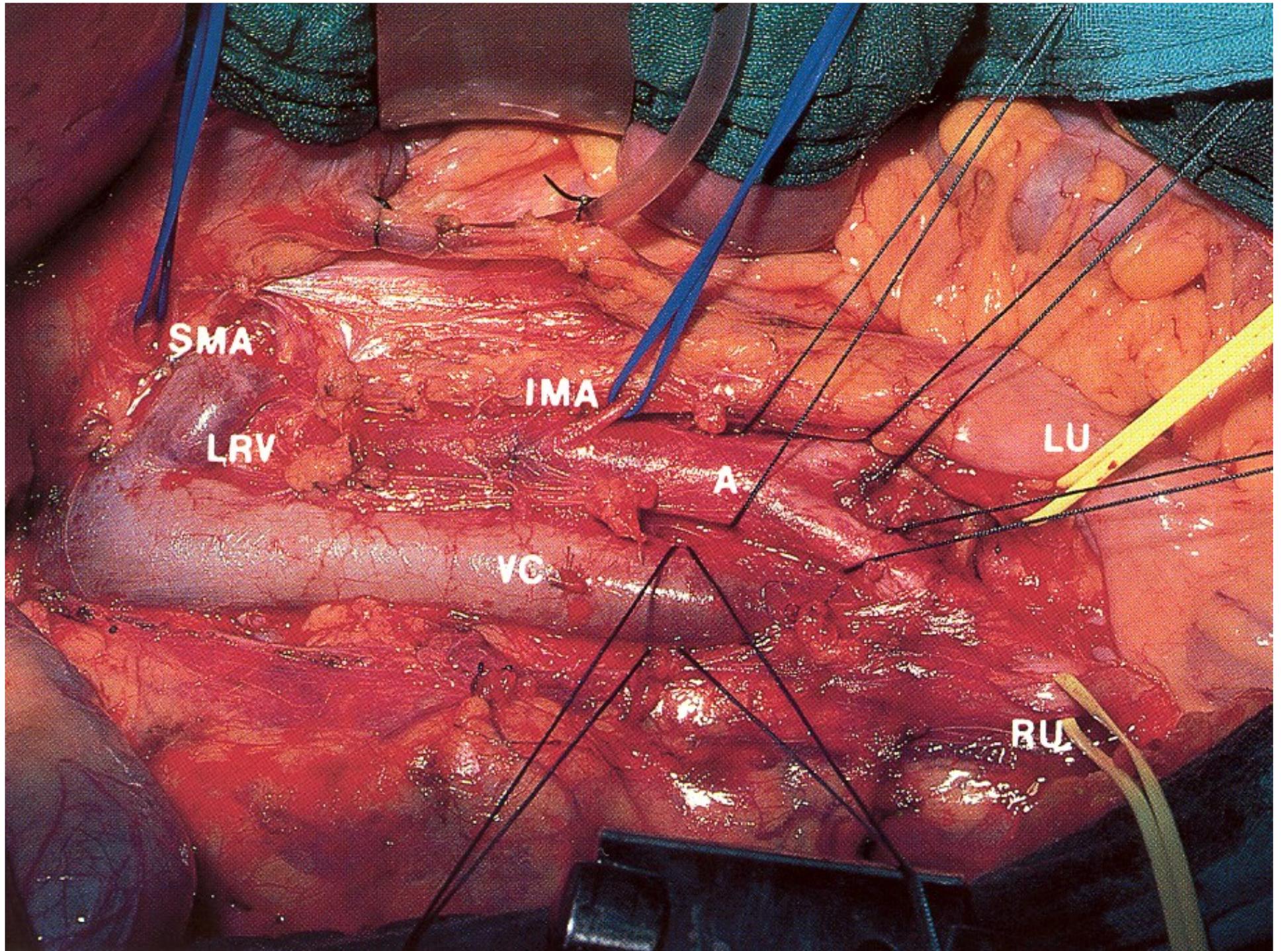
Category I	Dead on arrival at hospital	Uncontrolled
Category II	Unsuccessful resuscitation	Uncontrolled
Category III	Anticipated cardiac arrest	Controlled
Category IV	Cardiac arrest in a brain-dead donor	Controlled

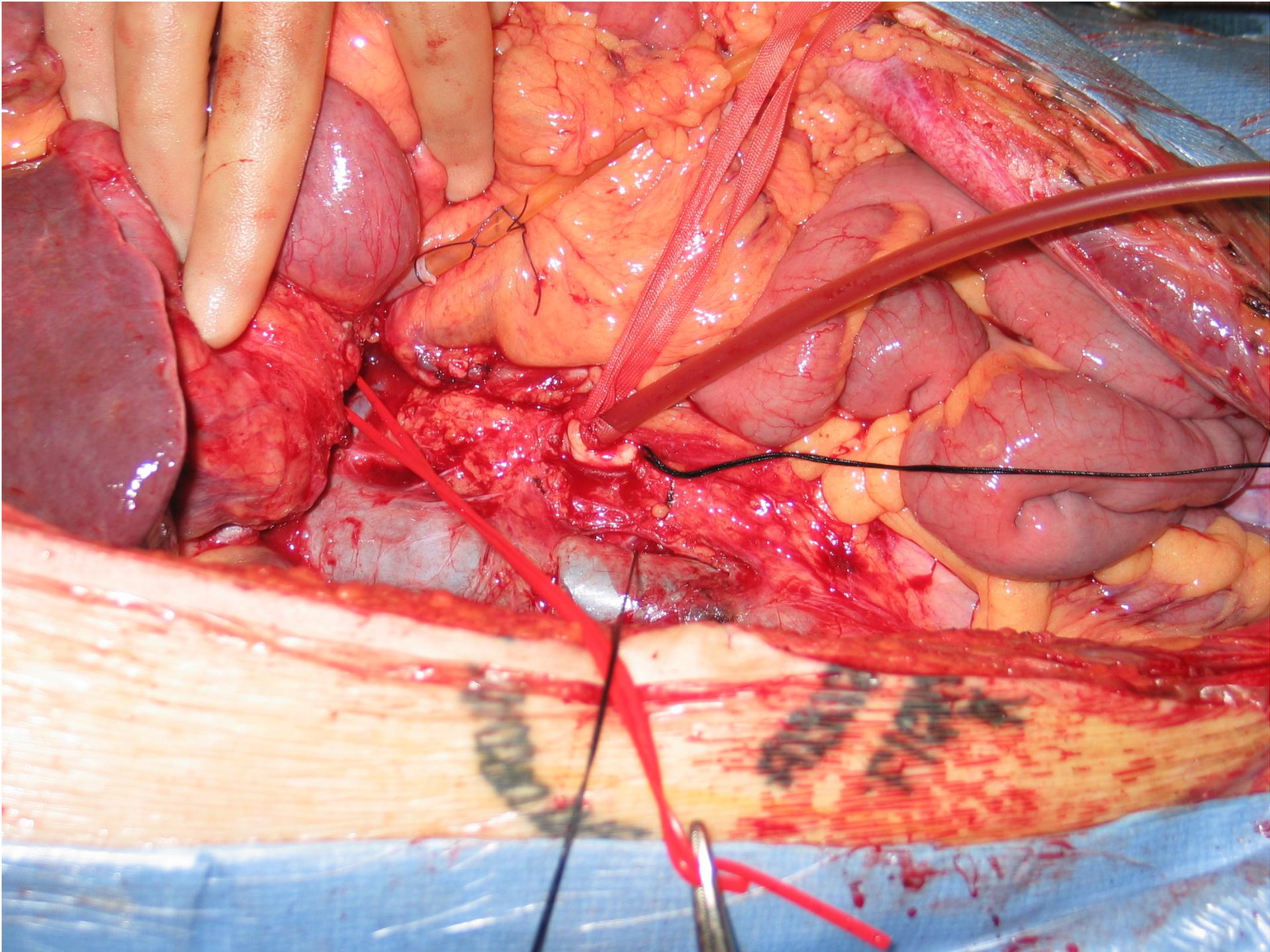
Organ retrieval procedure

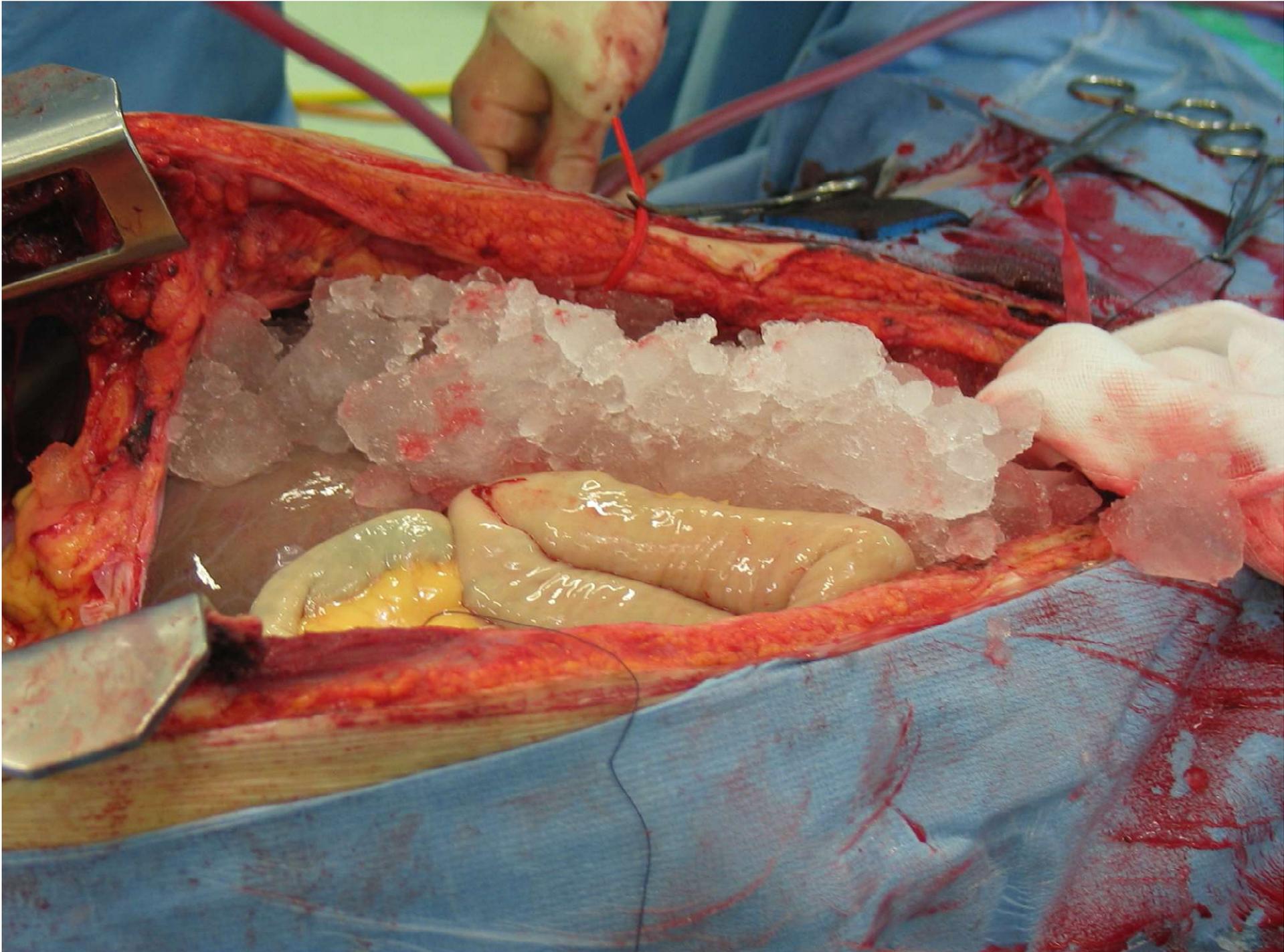












First warm ischaemic period

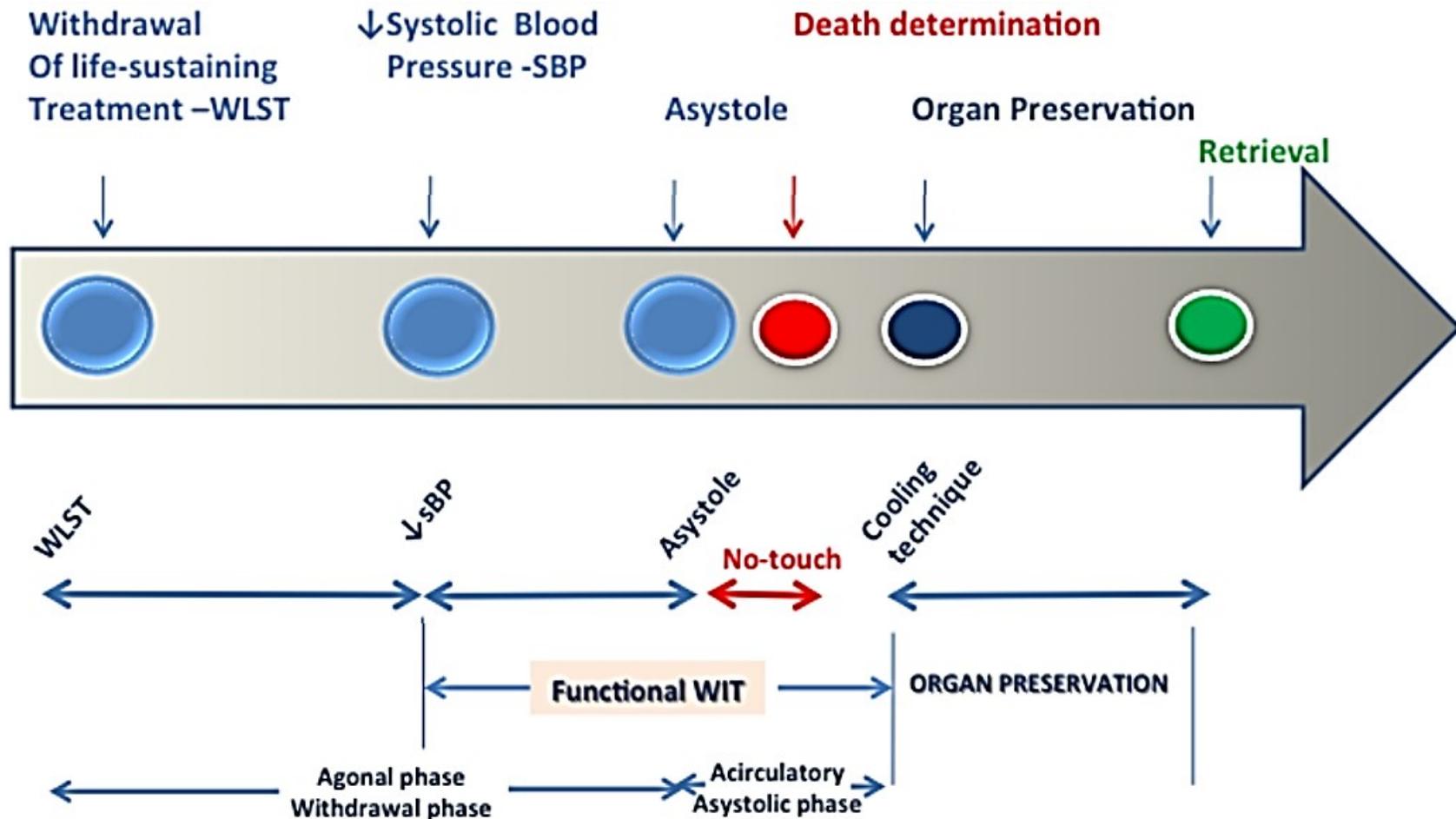


Cessation of circulation



Commencement of cold perfusion

Functional warm ischaemia in DCD



Functional WIT stand-down times

Organ	Minimum WIT (minutes)
Kidney	120
Liver	30 (20)
Pancreas	30
Lung	60

After a sustained fall in systolic blood pressure below 50mmHg, or O₂ sats below 70%

Cold ischaemia time



Commencement of cold perfusion



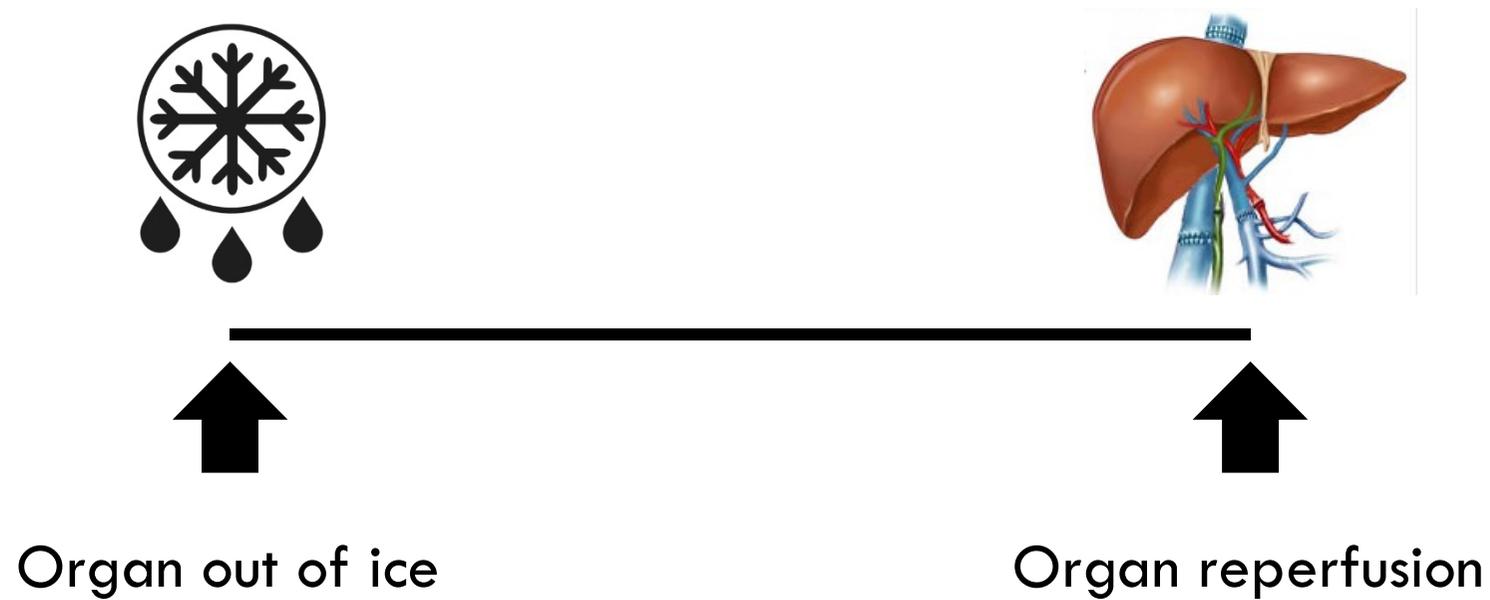
Organ out of ice

Acceptable CIT by organ



Organ	CIT (hours)
Heart	4
Kidney	24
Liver	6-10
Lung	4-6
Pancreas	12-18

Second warm ischaemic period



Cold ischaemia and preservation



Preservation fluids are designed to counter the harmful effects of cold ischaemia/storage

- Impermeant molecules (to prevent electrolyte/water movement across cell membrane)
- Buffers (to stabilise pH)
- Nutrients/precursors (for ongoing metabolism)

University of Wisconsin (UW) solution

Thank you