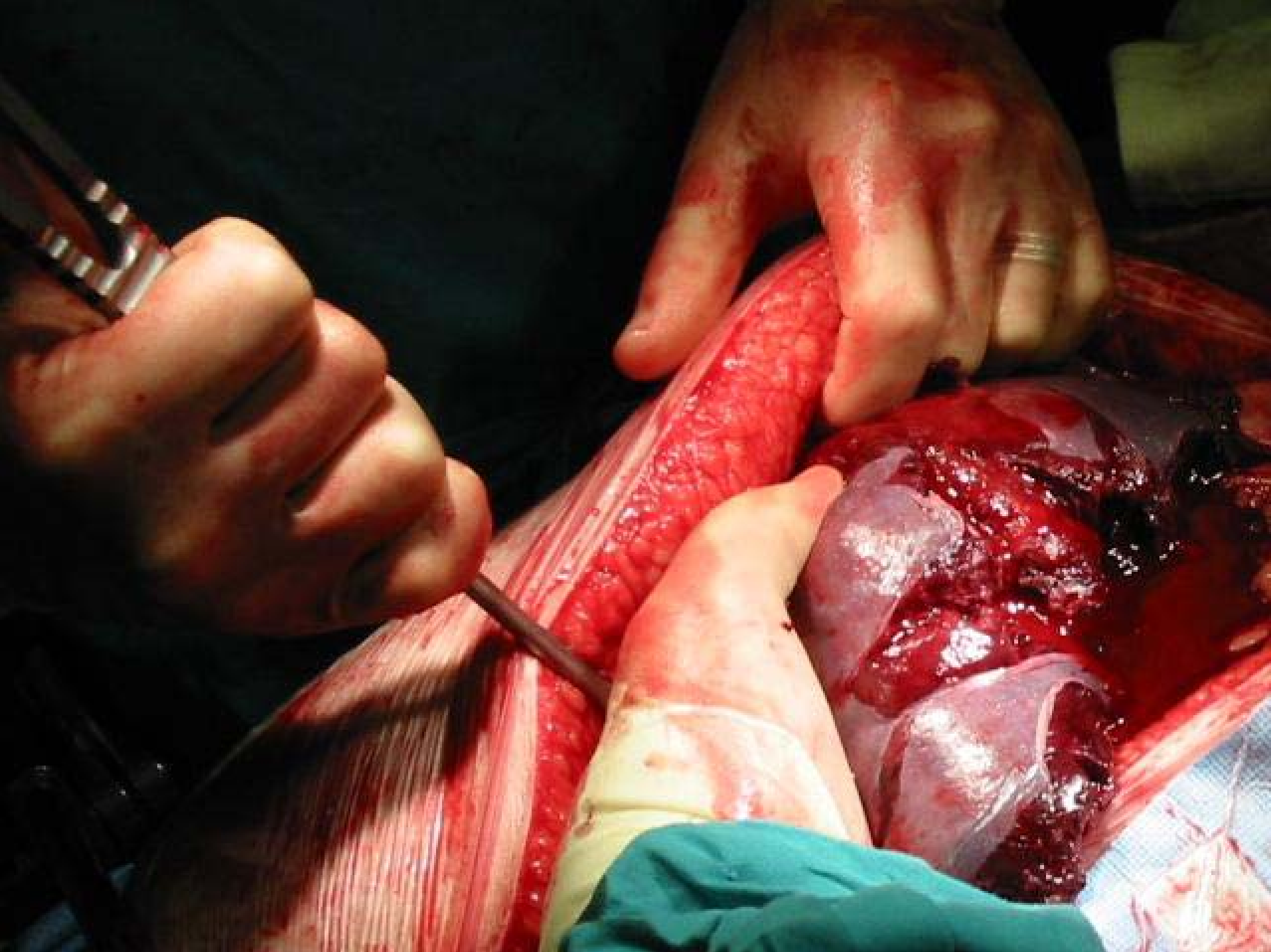


SYSTEMIC RESPONSE TO INJURY

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SYSTEMIC RESPONSE TO INJURY

EFFECTS OF HAEMORRHAGE + OXYGEN DEFICIT, FOLLOWED BY ACUTE PHASE RESPONSE:

- NEURO-ENDOCRINE
- INFLAMMATORY
- MULTIPLE, INTERLINKED CASCADES

LOCAL TO SYSTEMIC RESPONSE

- MAGNITUDE OF INJURY
- SECOND HITS
- **CYTOKINE MEDIATED**



NEURO-ENDOCRINE RESPONSE

- MASSIVE RECEPTOR STIMULUS
- HYPOTHALAMO –PITUITARY AXIS

- CATECHOLAMINES
- GLUCO + MINERALO- CORTICOIDS
- GLUCAGON
- ADH
- INSULIN

NEURO-ENDOCRINE EFFECT

- RAPID GLYCOGENOLYSIS
- H₂O + NaCl RETENTION + OEDEMA
- GLUCOSE INTOLERANCE
- **GLUCONEOGENESIS**
- **PROTEIN SYNTHESIS REDIRECTED TO ACUTE PHASE PROTEINS + WOUND HEALING**
- **MUSCLE WASTING**

INFLAMMATORY RESPONSE

- LOCAL RESPONSE
SYSTEMATISED BY
CYTOKINES
- CELLULAR + HUMORAL
COMPONENTS

HUMORAL RESPONSE

- COMPLEMENT
- KININS
- COAGULATION

- CYTOKINE MEDIATED

HUMORAL RESPONSE

- MEMBRANE DAMAGE
- CELLULAR DAMAGE
- SLUDGING

- **LEAKY CAPPILLARIES**
- **COAGULOPATHY**
- **ANAEROBIC METABOLISM**
- **COMPROMISE OF ORGAN FUNCTION**

CELLULAR RESPONSE

- **SYSTEMIC INFLAMMATION**
- **CYTOKINE MEDIATED**
- LEUKOCYTE ACTIVATION
- ENDOTHELIAL ACTIVATION
- PLATELET ACTIVATION

EFFECTS OF CELLULAR RESPONSE

- MEMBRANE DAMAGE
- COAGULATION
- CELLULAR DAMAGE
- COAGULOPATHY

- **ORGAN COMPROMISE**



TRAUMA TO SEPSIS

- IMMUNE COMPROMISE
- DEVITALISED TISSUE
- CATHETERS
- HAEMATOMAS
- CONTAMINATION
- **MALNUTRITION**
- BACTERIAL TRANSLOCATION

SYSTEMIC INFLAMMATORY RESPONSE SYNDROME

- **SIRS**

- **T < 36 > 38**

- **P > 90 / MIN**

- **RR > 20 / MIN, PCO₂ < 32**

- **WCC < 4 > 12**

SIRS & SEPSIS

- **INFECTION = INVASION X BACTERIA**
- **SEPSIS = SIRS + INFECTION**
- **SEPTIC SHOCK**
- **MULTIPLE ORGAN DYSFUNCTION**
- **DEATH**

CHAOS: PRO- AND ANTI- INFLAMMATORY CYTOKINES

- SIRS
- CARS
- MARS



STRATEGIES MODIFY THE INFLAMMATORY RESPONSE

- HYPOTENSIVE / GOAL DIRECTED RESUSCITATION
- TIMING SURGERY
- APPROPRIATE VENTILATION
- NORMOGLYCEMIA
- INFECTIOUS PRECAUTIONS
- NORMOTHERMIA
- **EARLY ENTERAL / PARENTERAL FEEDING**



SUMMARY



- SYSTEMIC INFLAMMATORY RESPONSE
- NON-SPECIFIC RESPONSE
- CELLULAR + HUMORAL
- TARGET = CAPILLARIES, BASEMENT MEMBRANES, ORGANS
- RESEMBLANCE TO SEPSIS