FAT EMBOLISM SYNDROME

After long-bone fracture · a clinical diagnosis

SUPPORT
and prevent

WHEN TO THINK OF IT: 24-72 h after a long-bone / pelvic fracture (or orthopaedic surgery, marrow reaming). New hypoxia + confusion + rash in a young trauma patient = fat embolism until proven otherwise.

THE CLASSIC TRIAD

Gurd criteria

RESPIRATORY

Hypoxaemia, tachypnoea, dyspnoea; may progress to ARDS. The earliest and commonest feature.

NEUROLOGICAL

Confusion, agitation, drowsiness, seizures; usually reversible.

PETECHIAL RASH

Non-blanching petechiae over axillae, conjunctivae, oral mucosa; late but near-specific.

DIAGNOSE

clinical - no single test

- **Clinical pattern -** Gurd major (respiratory, cerebral, petechiae) + minor criteria
- **Supportive -** thrombocytopenia, anaemia, fat in urine / retina (non-specific)
- **Imaging -** CXR / CT: diffuse infiltrates (ARDS pattern); exclude PE
- **Exclude -** pulmonary embolism, pneumonia, sepsis, head injury

MANAGE · SUPPORTIVE

- **Oxygen / ventilation -** lung-protective ventilation if ARDS; treatment is supportive
- **Haemodynamics -** fluids, organ support; treat as evolving ARDS
- **PREVENTION is key -** early operative fixation of long-bone fractures reduces incidence
- **Steroids -** not routinely recommended; prophylactic role remains debated

GURD CRITERIA (need 1 major + 4 minor): MAJOR - respiratory insufficiency, cerebral signs, petechial rash. MINOR - tachycardia, fever, retinal changes, jaundice, renal changes, thrombocytopenia, anaemia, raised ESR, fat macroglobulinaemia.

EXCLUDE THE MIMICS

they look identical

PULMONARY EMBOLISM

Also sudden hypoxia post-injury - CTPA; PE has RV strain, not a petechial rash.

PNEUMONIA / ARDS

Aspiration, transfusion (TRALI) or other ARDS cause; culture, imaging, timeline.

HEAD INJURY / OTHER

Traumatic brain injury, hypoxia, sepsis, drug effects causing the confusion.

PEARLS & PITFALLS

- Suspect fat embolism in a young trauma patient with new hypoxia and confusion 24-72 h after a fracture.
- Management is supportive (oxygen, lung-protective ventilation); early fracture fixation prevents it.
- It is a clinical diagnosis - no single test confirms it; the petechial rash is late but near-specific.
- Always exclude pulmonary embolism, pneumonia and head injury, which can look identical.

References: Gurd & Wilson criteria · standard orthopaedic & critical-care references.

Educational aid; verify doses against local protocol and patient factors.