

# Pathology of Swine

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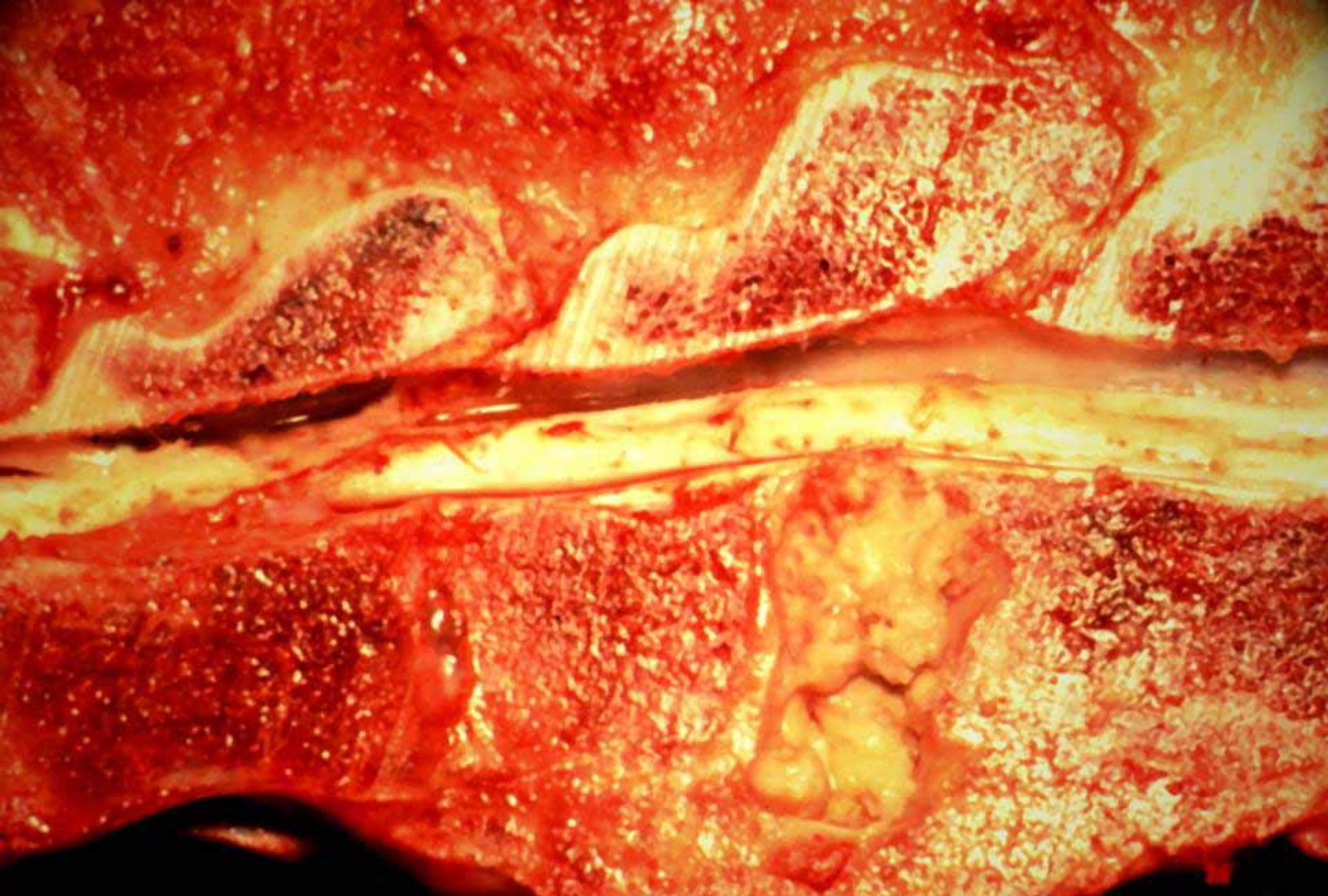
# Musculoskeletal System

# Posterior Paralysis/Paresis in Swine

- **Spinal cord**
  - enterovirus
  - selenium toxicity
  - ruptured disk
  - trauma
  - lymphosarcoma
- **Bones and Muscles**
  - Ischial epiphysiolysis
  - Torn “hamstring”
  - Osteomalacia/osteomyelitis → fracture
- **Vertebral column**
  - osteomyelitis
  - osteomalacia
- **Nerves**
  - Organic arsenicals
  - Trauma



**Arcanobacterium pyogenes**



**Arcanobacterium pyogenes**



**Arcanobacterium pyogenes**

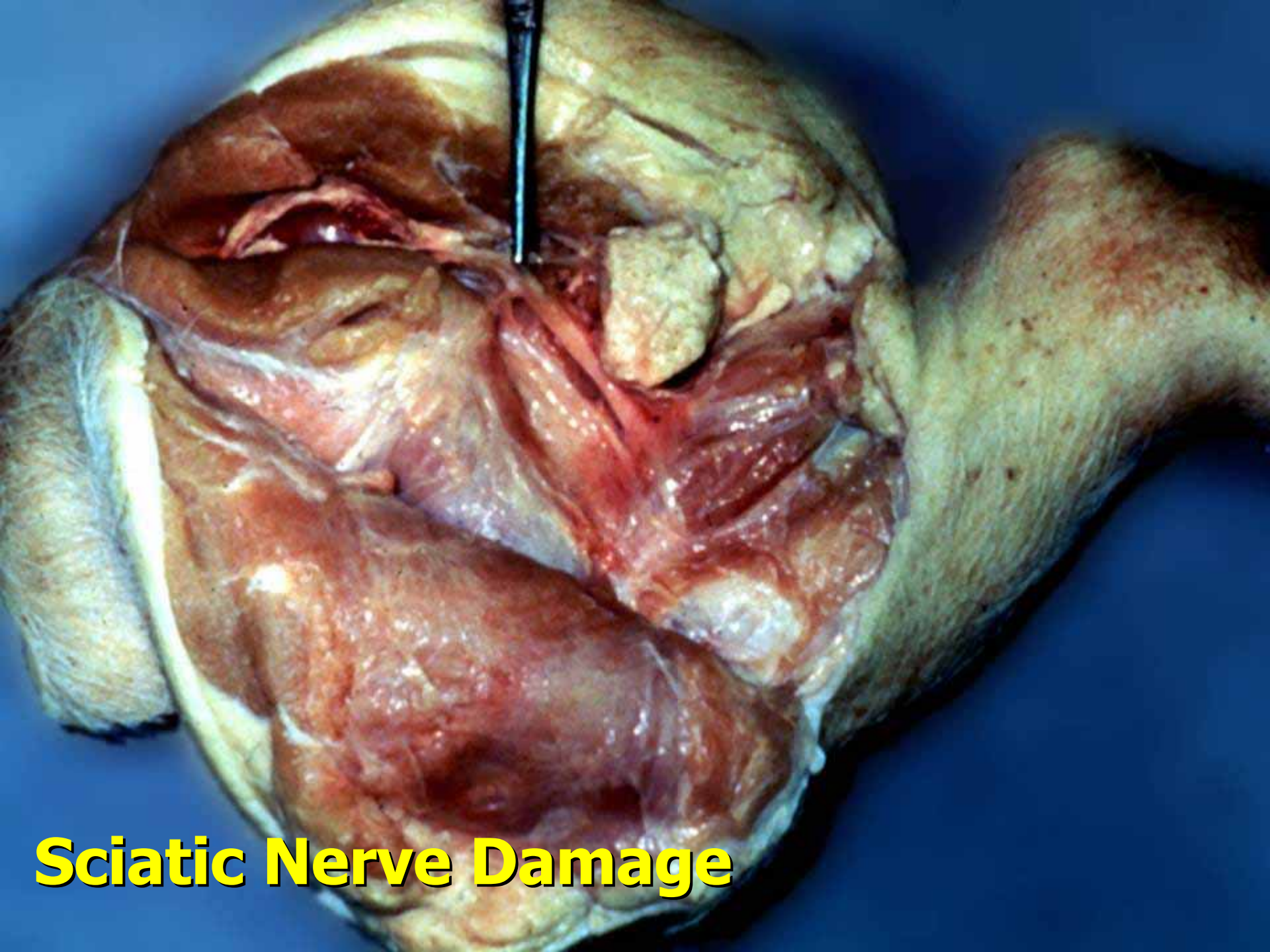


**Degenerative Disc Disease**



**Sciatic Nerve Damage**

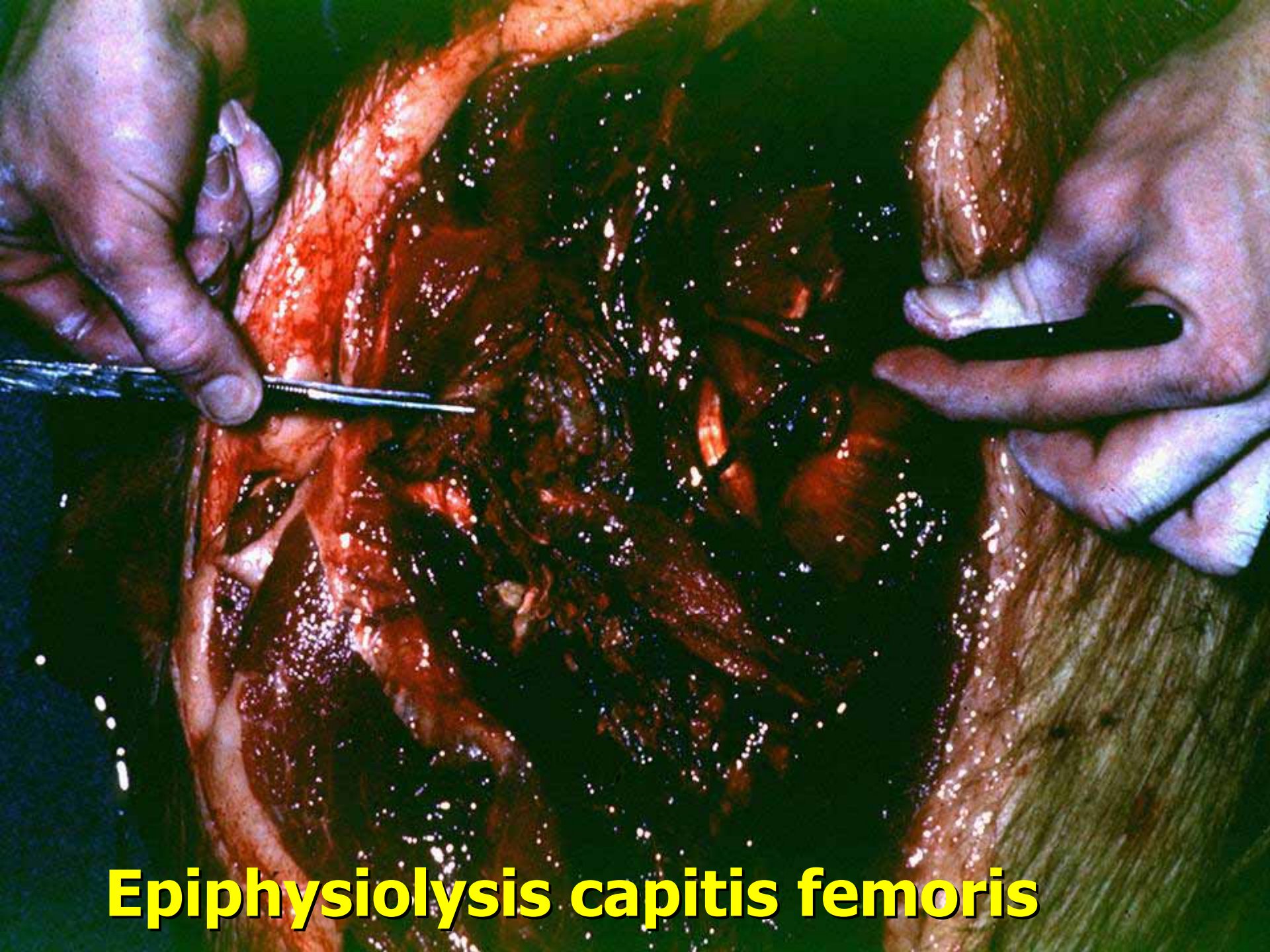




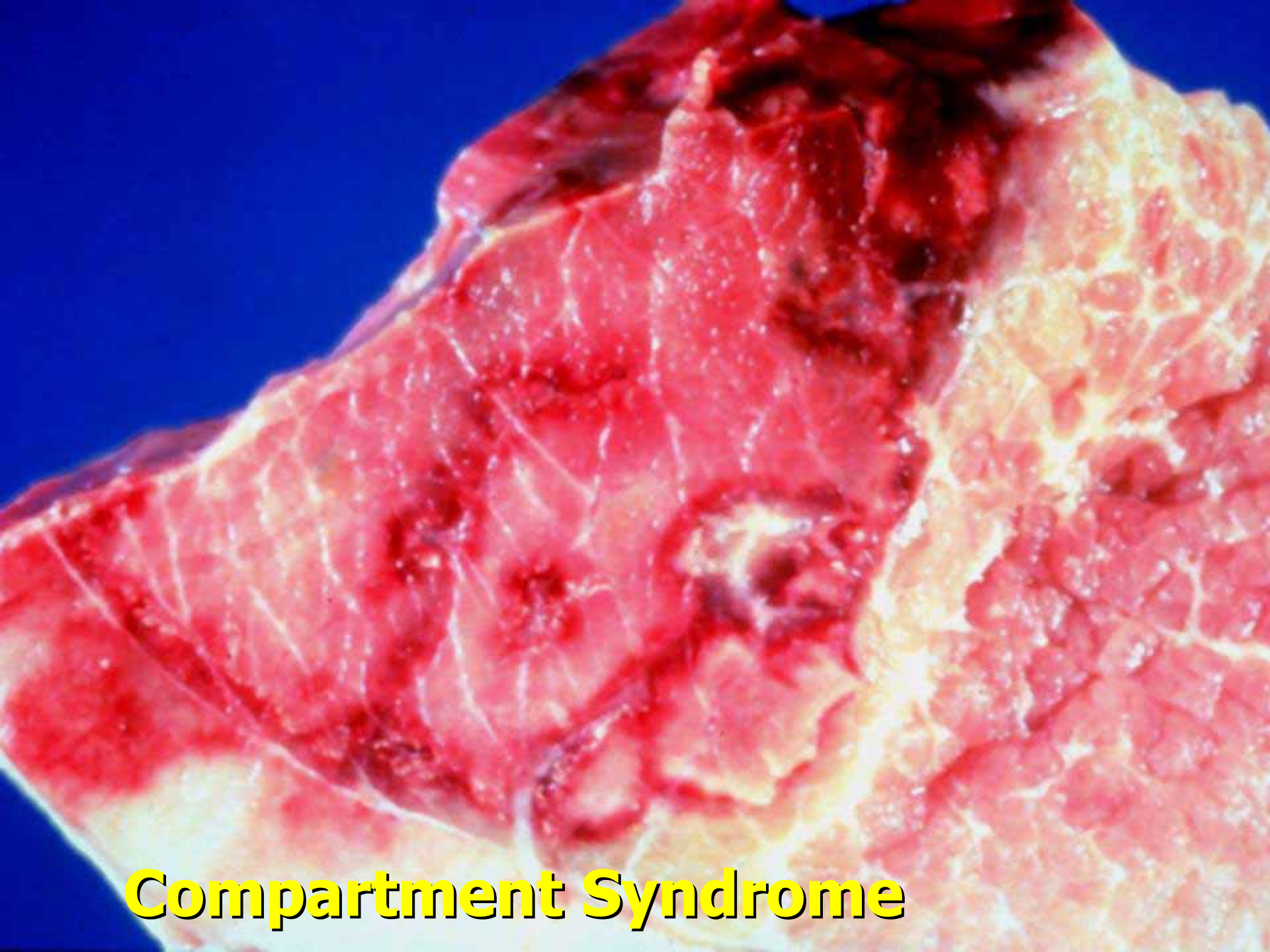
**Sciatic Nerve Damage**



**Apophysiolytic tuberis ischii**



**Epiphysiolysis capitis femoris**



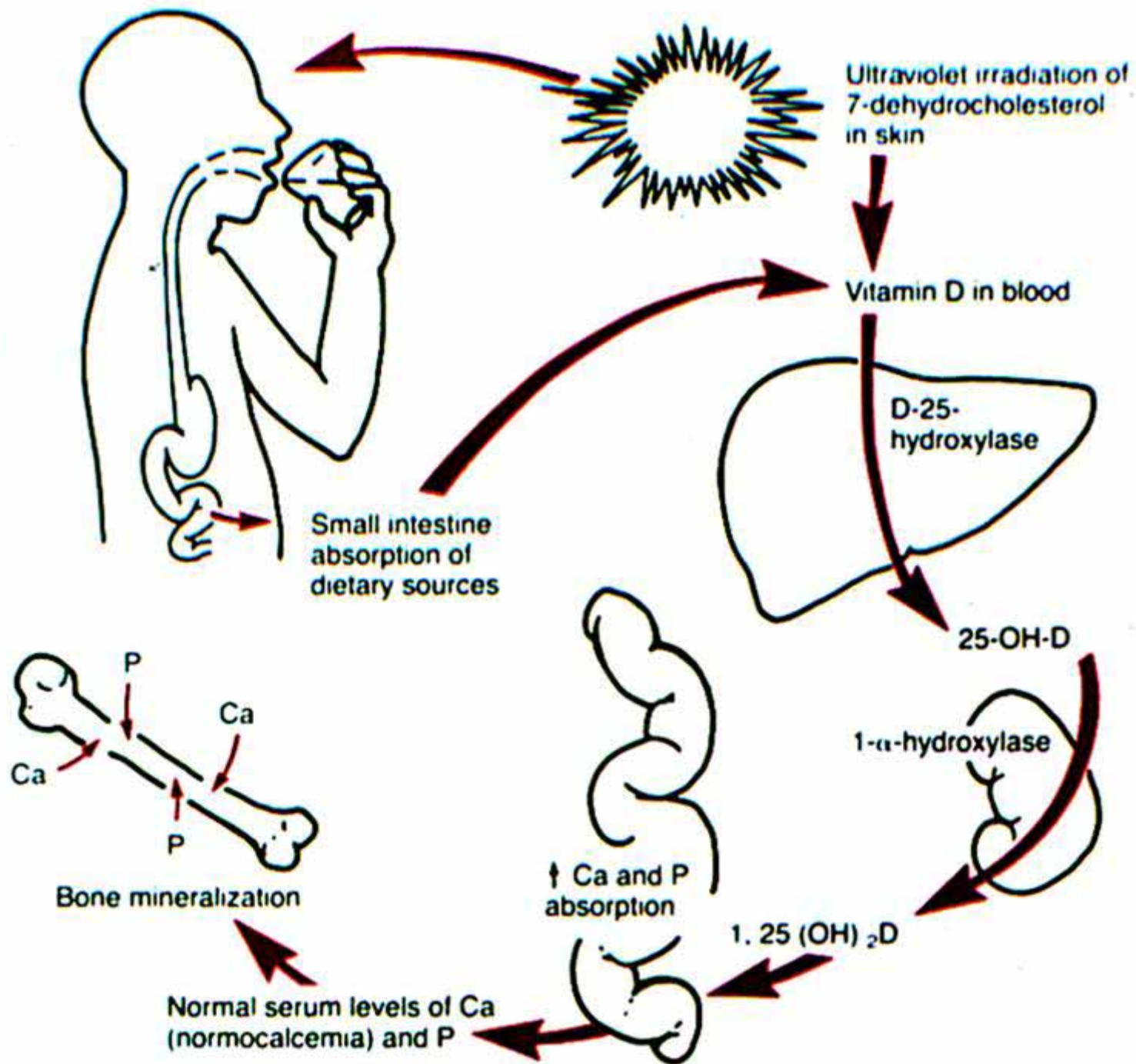
**Compartment Syndrome**



**Lactogenic Osteoporosis**

# Hypovitaminosis D

- **Causes hypocalcemia**
- **Homeostatic mechanisms lead to normocalcemia, mobilization of bone calcium**
- **Hypophosphatemia persists, thus adds to impaired bone mineralization**
  - **Rickets in young growing animals**
  - **Osteomalacia in adult animals**



# Rickets (and Osteomalacia)

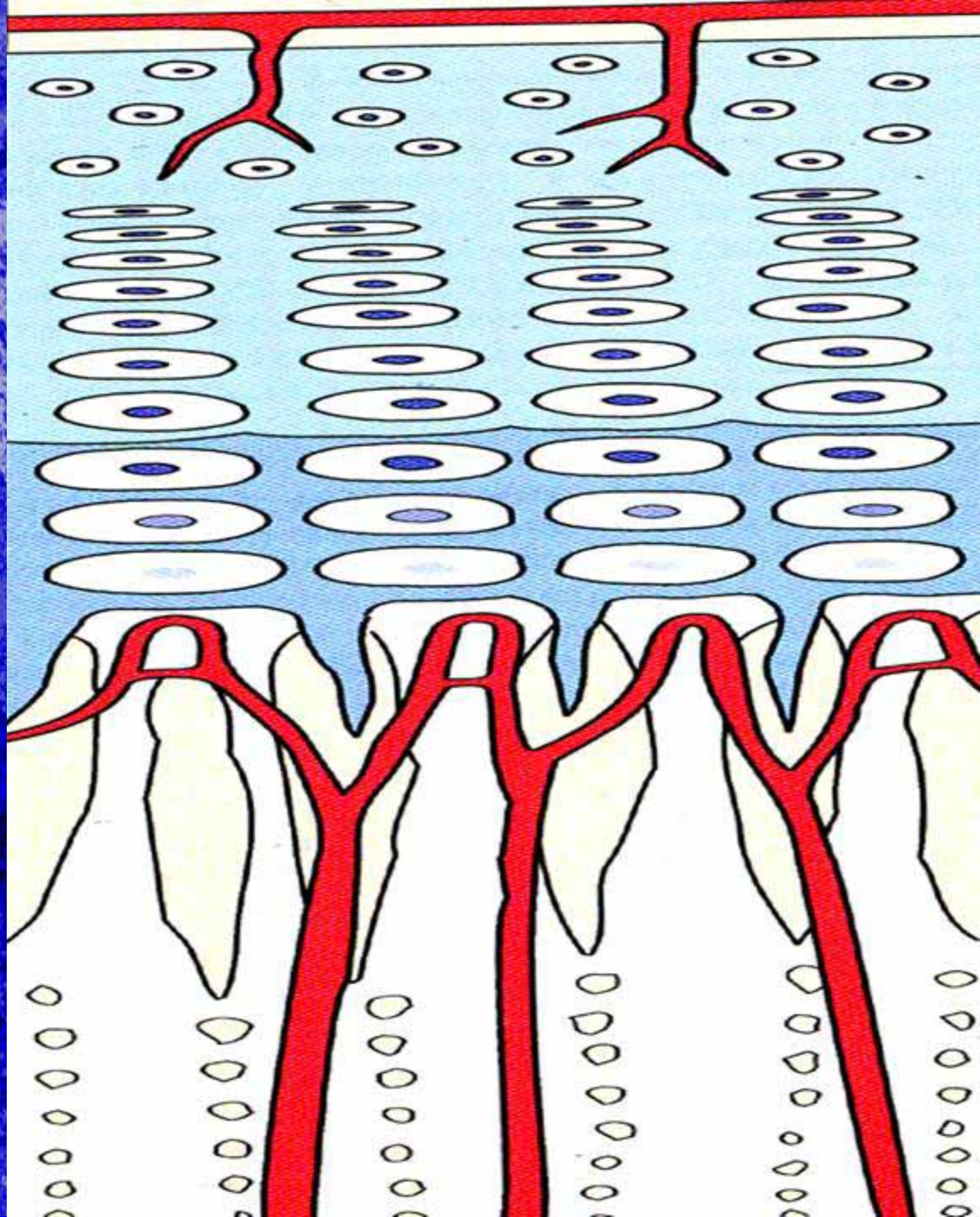
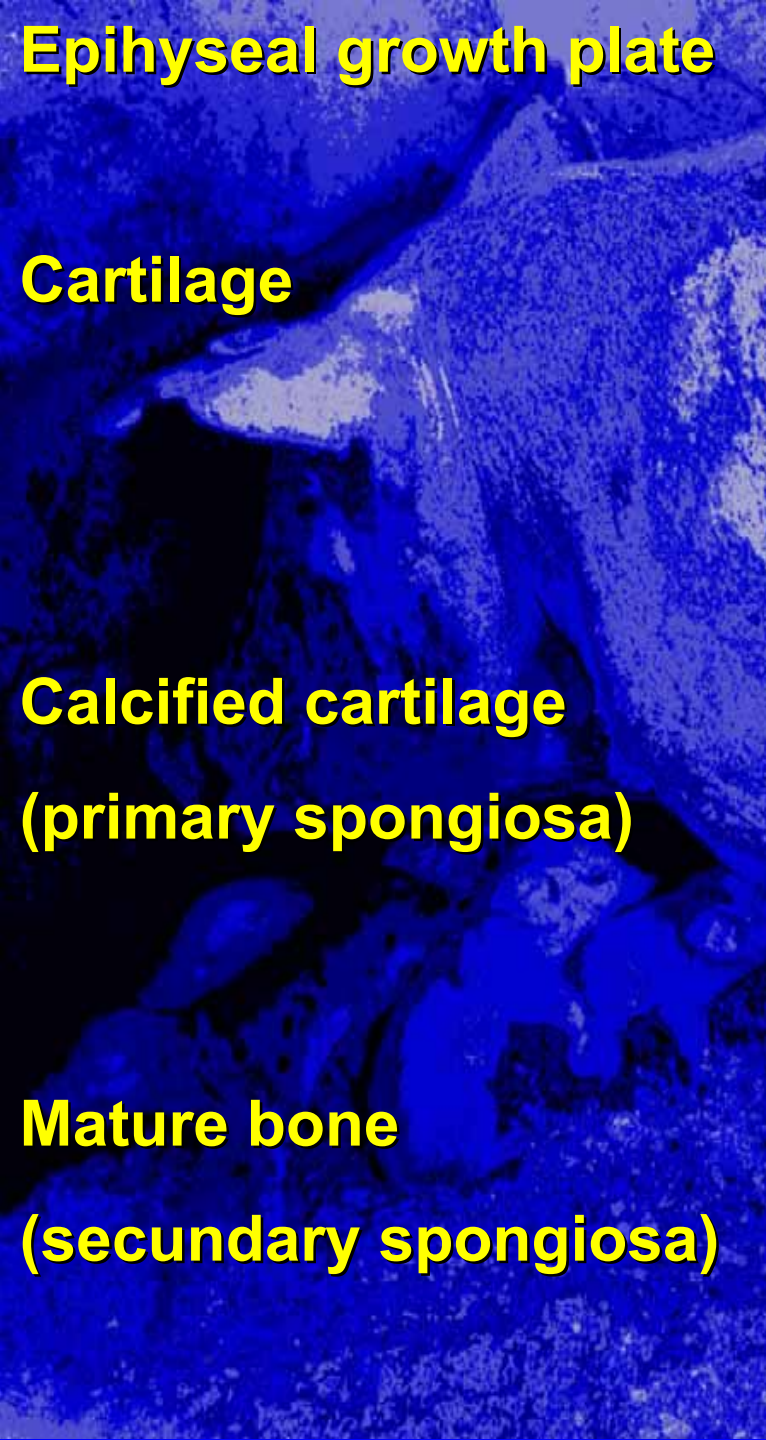
- **Classical manifestation of Vitamin D deficiency**
- **Basic derangement is an excess of unmineralized matrix and vascular invasion of cartilage**
- **Lesions most prominent in the physeal regions**



# Rickets (and Osteomalacia)

## Histopathology

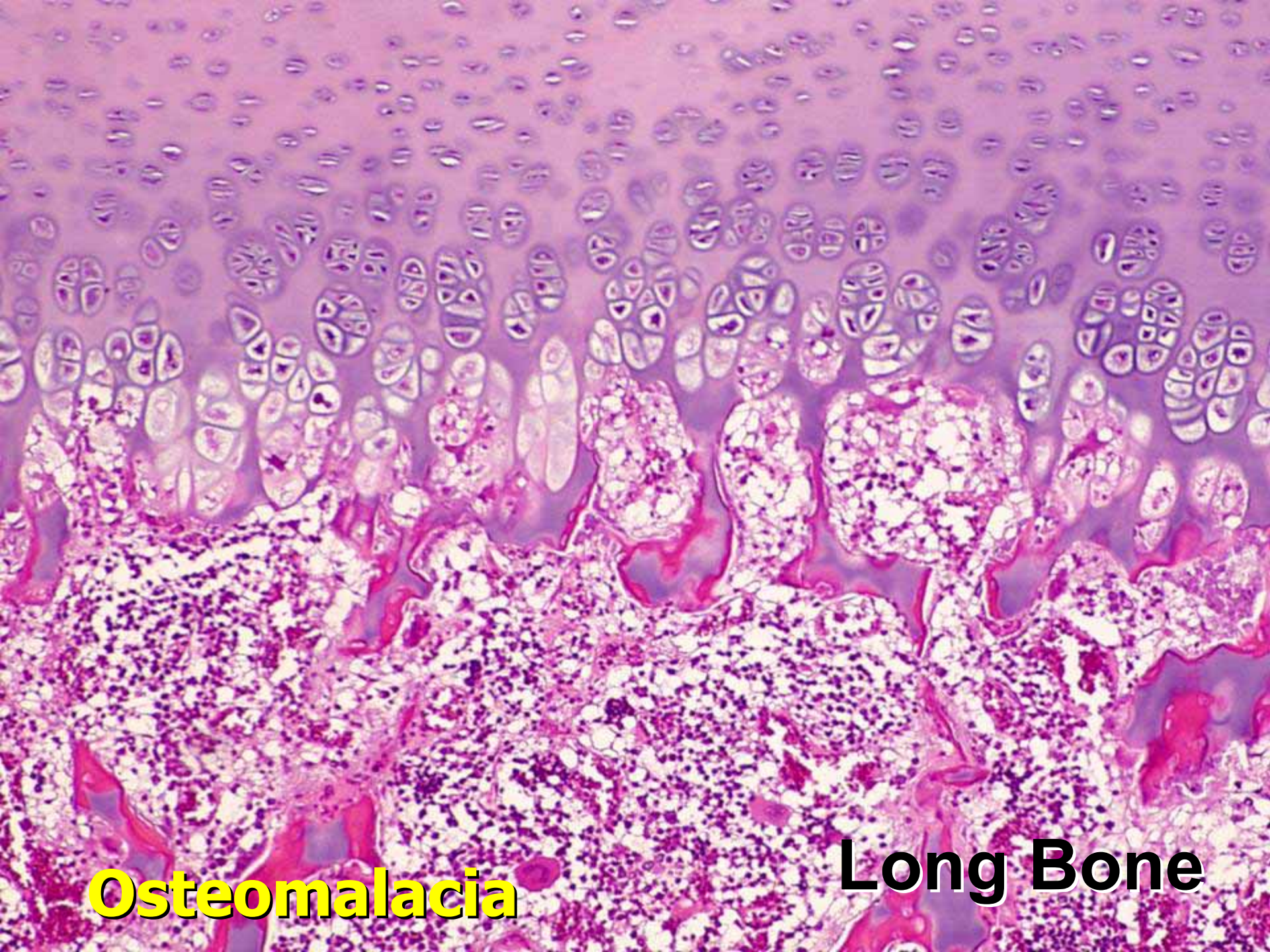
- Increased thickness of zone of hypertrophy
- Disorderly arrangement of the zone of hypertrophy
- Disorderly penetration of cartilage by blood vessels
- Excess of uncalcified osteoid in the metaphysis (*osteoid seams*)





**Osteomalacia**

**Long Bone**



**Osteomalacia**

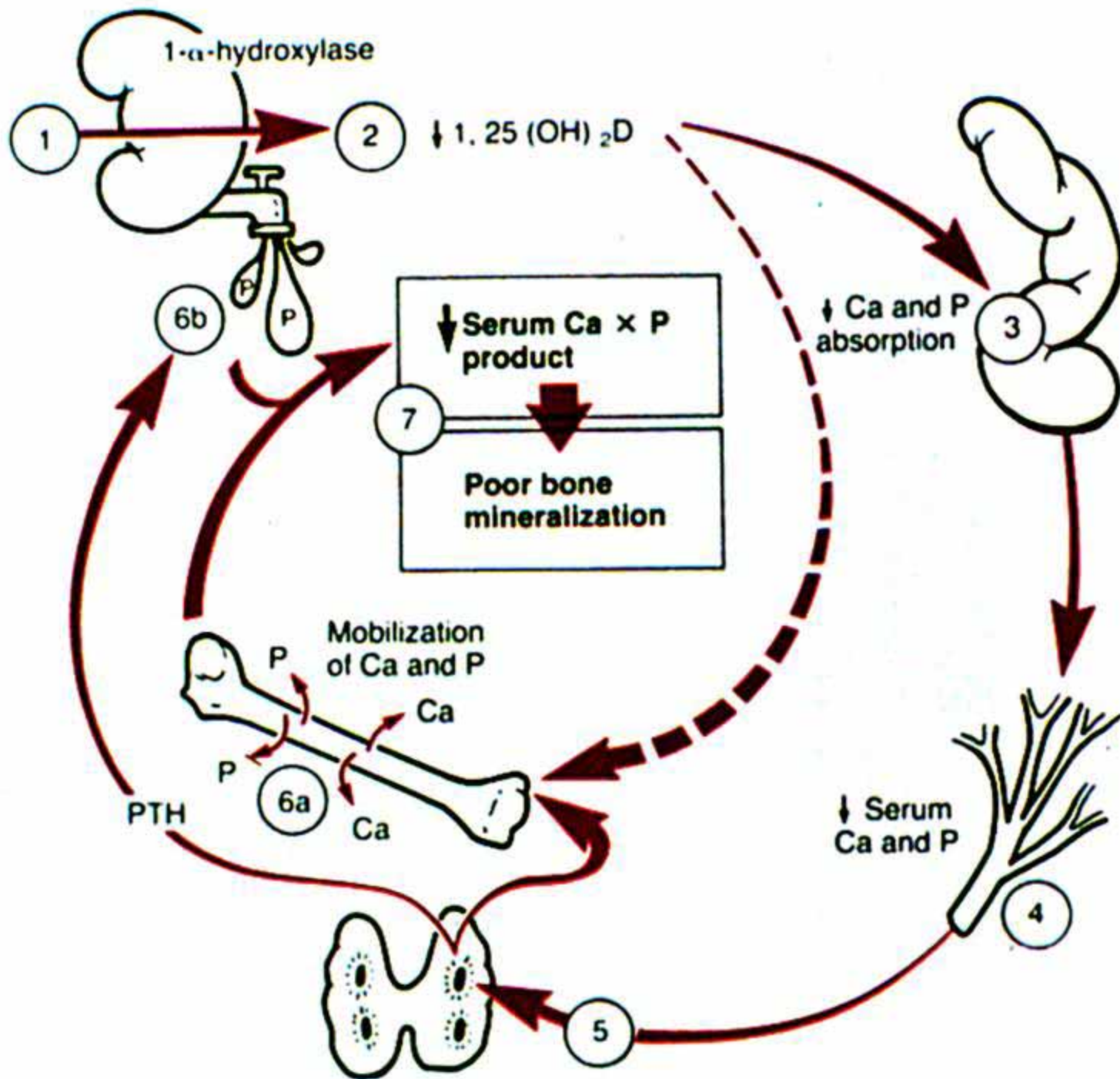
**Long Bone**

# Osteoporosis

- **Caused by deficiencies of Ca, P, or Vitamin D**
- **Results when resorption rates exceed formation due to increased PTH**
- **Mainly affects flat bones of skull, scapula, ileum, and metaphysis of long bones**
- **Hypocalcemia complicated by Vitamin D deficiency produces more severe lesions**
  - **Uncomplicated hypocalcemia is rare**
  - **Impairment of homeostatic mechanisms**

# Osteoporosis Histopathology

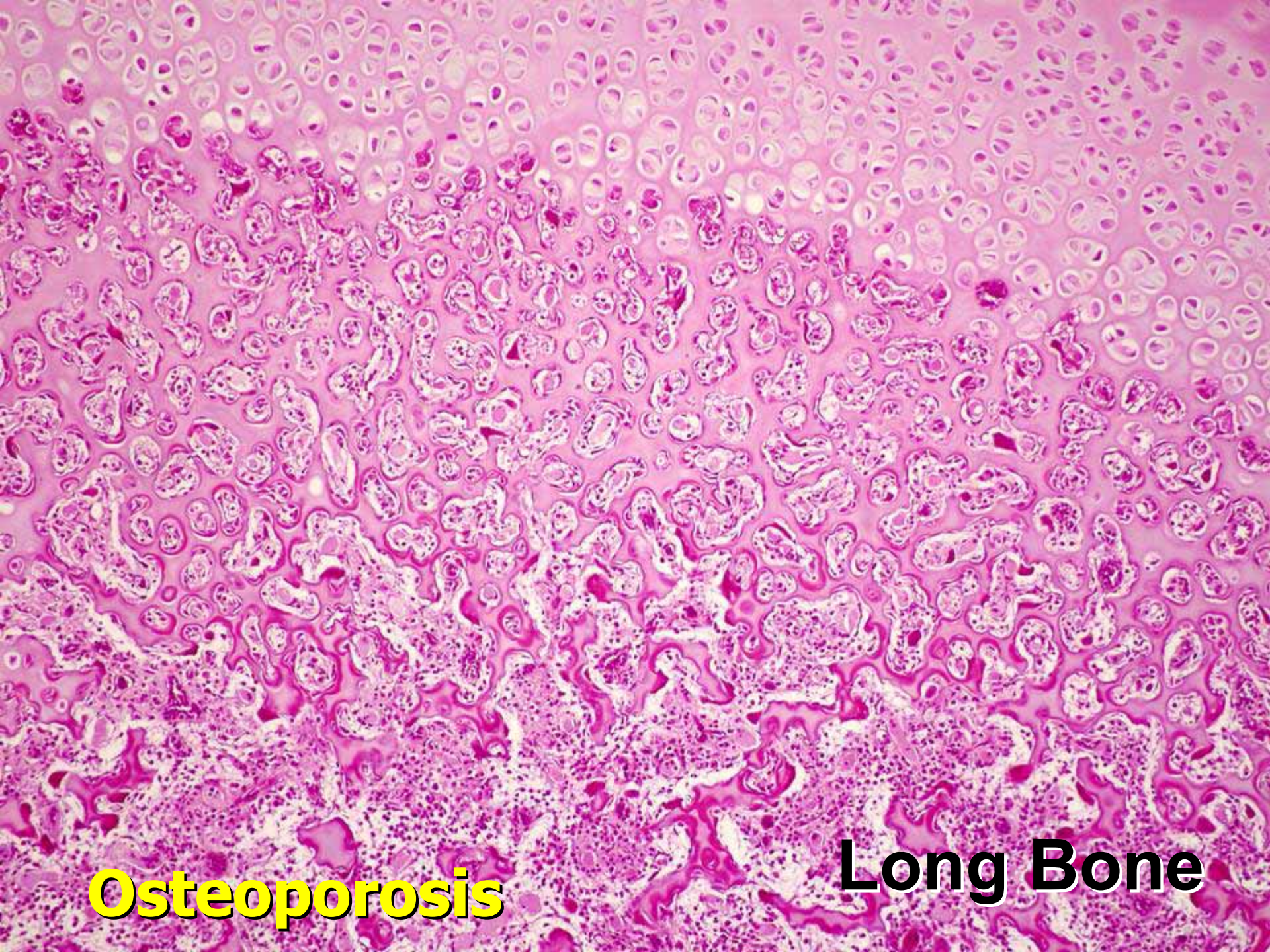
- **Cortical bone is thin due to increased endosteal or intracortical (severe hypocalcemia) resorption**
- **Osteoid seams are of normal width and frequency**
- **Mineralization usually normal**
- **Decreased and or thinned trabeculae**



# Osteoporosis Histology

- Cortical thinning
- Trabecular fragmentation
- Abnormal mineralization with retention of cartilage cores
- Retained osteoid in epiphyseal growth plate of few bones
- Periosteal fibrosis





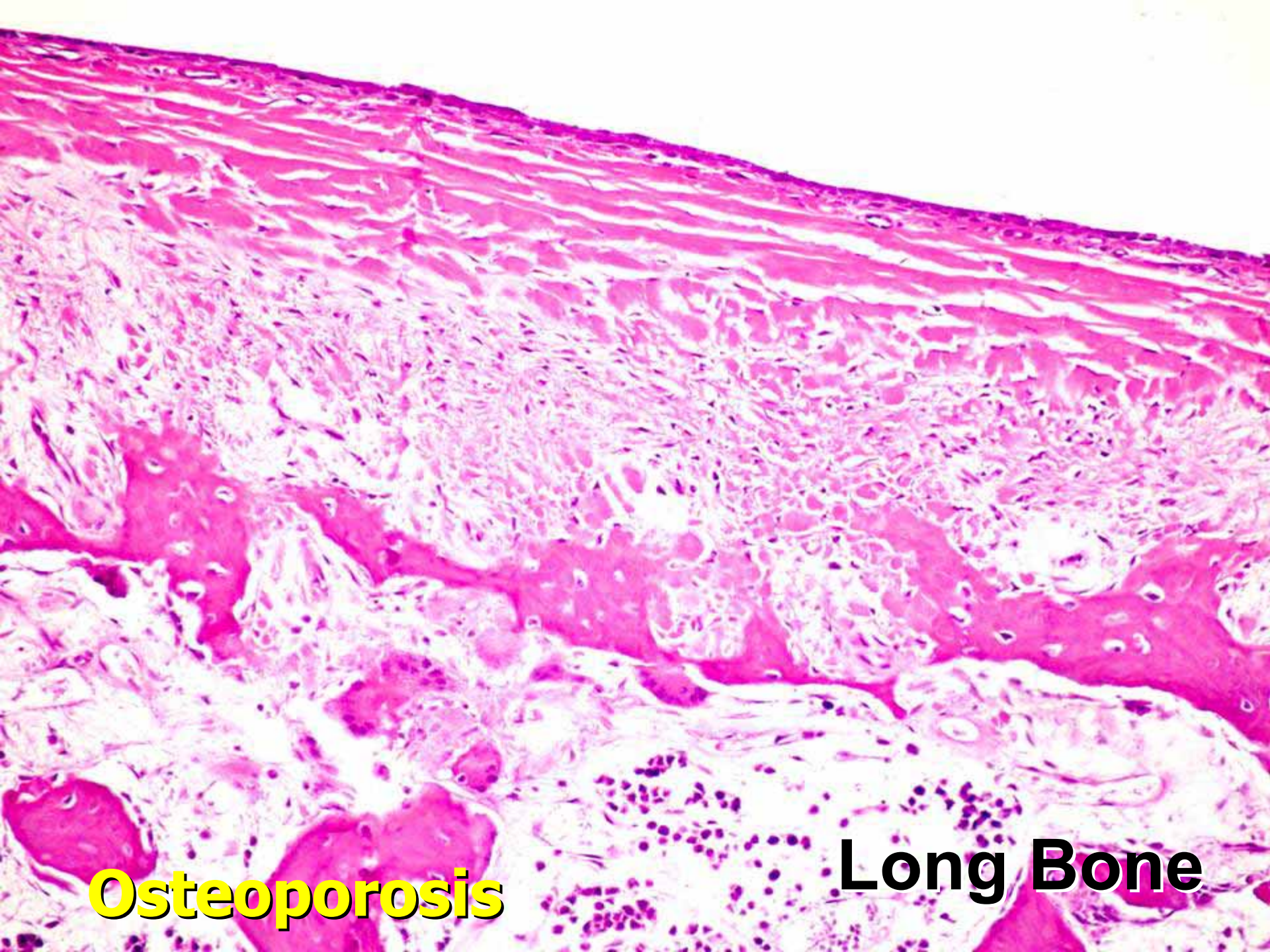
**Osteoporosis**

**Long Bone**



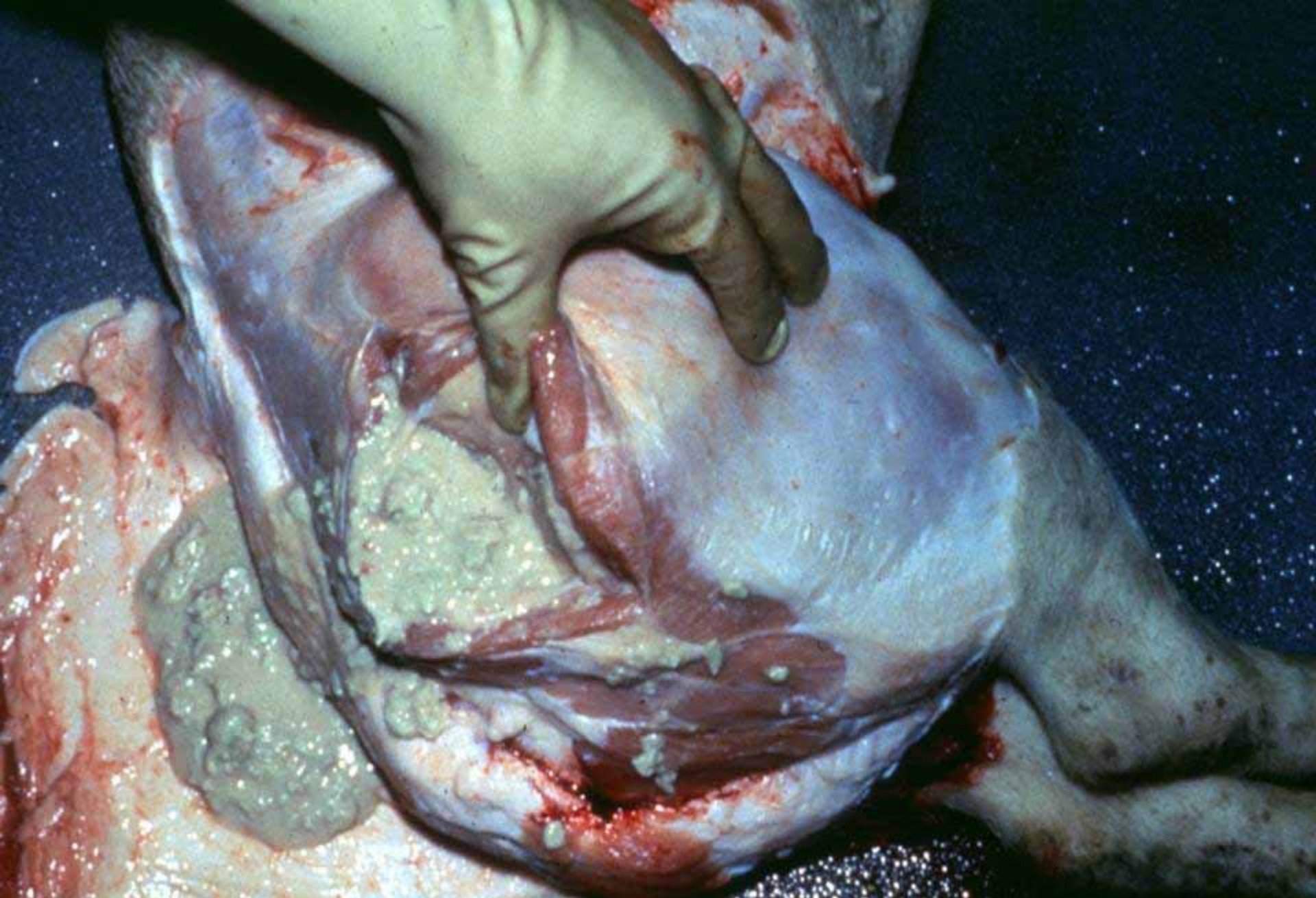
**Osteoporosis**

**Long Bone**



**Osteoporosis**

**Long Bone**



**Arcanobacterium pyogenes**

# Lameness in Swine

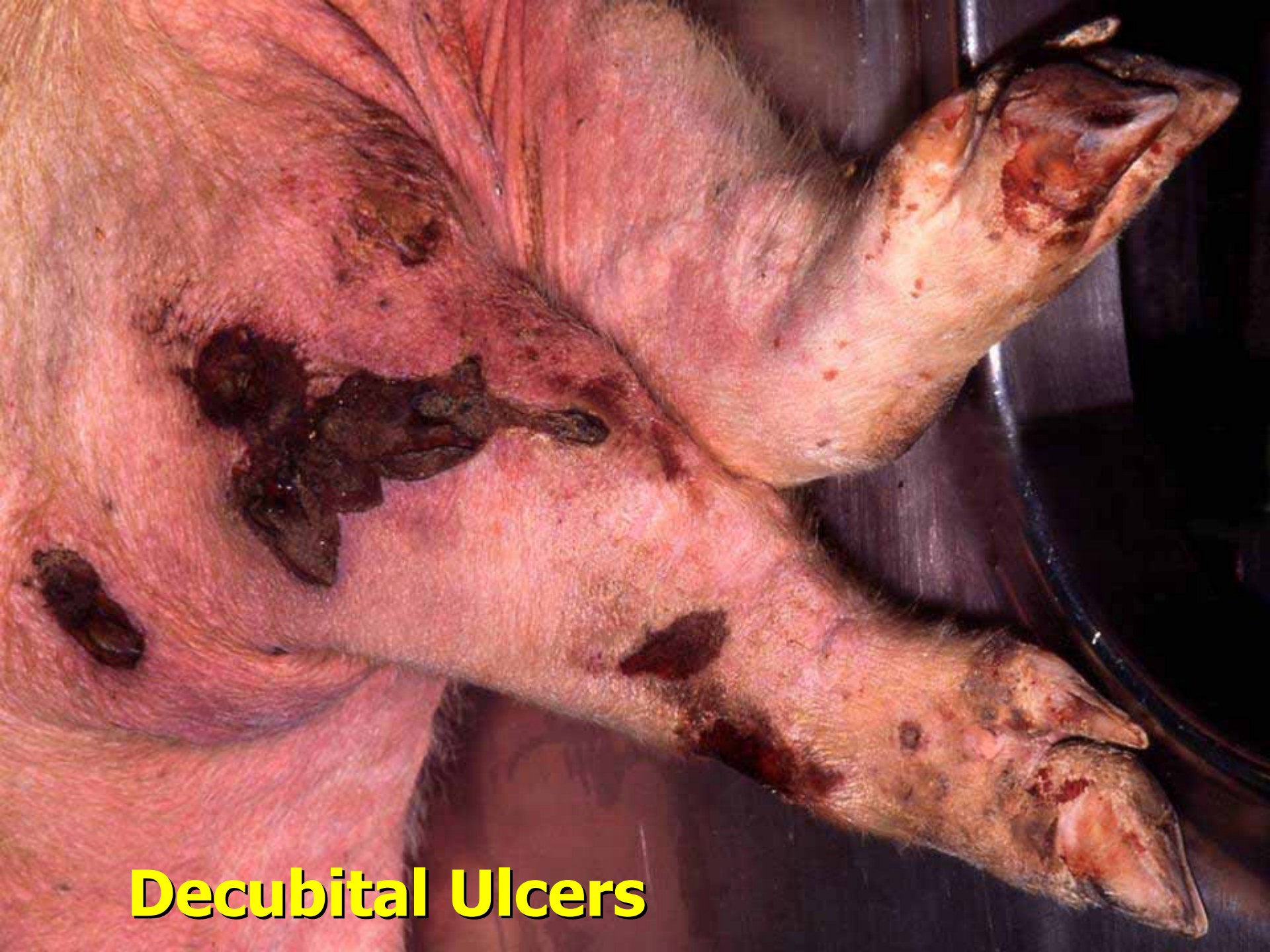
- **Bacterial arthritis**
  - *S. suis*
  - *H. parasuis*
  - *M. hyorhinis*
  - *S. equisimilis*
  - *E. rhusiopathiae*
  - *M. hyosynoviae*
  - *A. pyogenes*
- **Degenerative arthritis**
  - OCD
- **Other**
  - Fractures
  - Ruptured cruciates
  - Overgrown hooves
  - Hoof and heel abscesses



**Pododermal Abrasions**



**Phalangeal Arthritis**

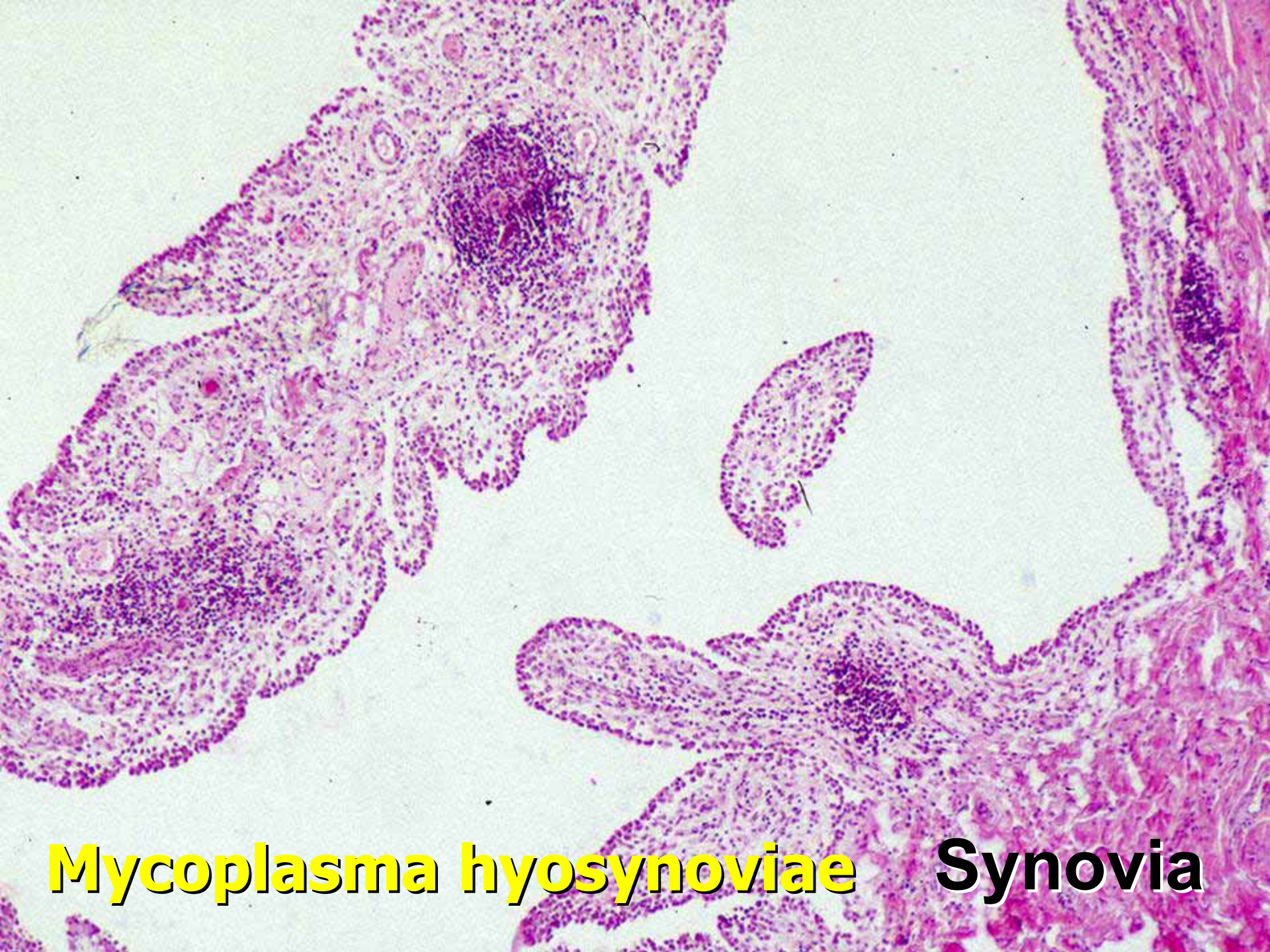


**Decubital Ulcers**



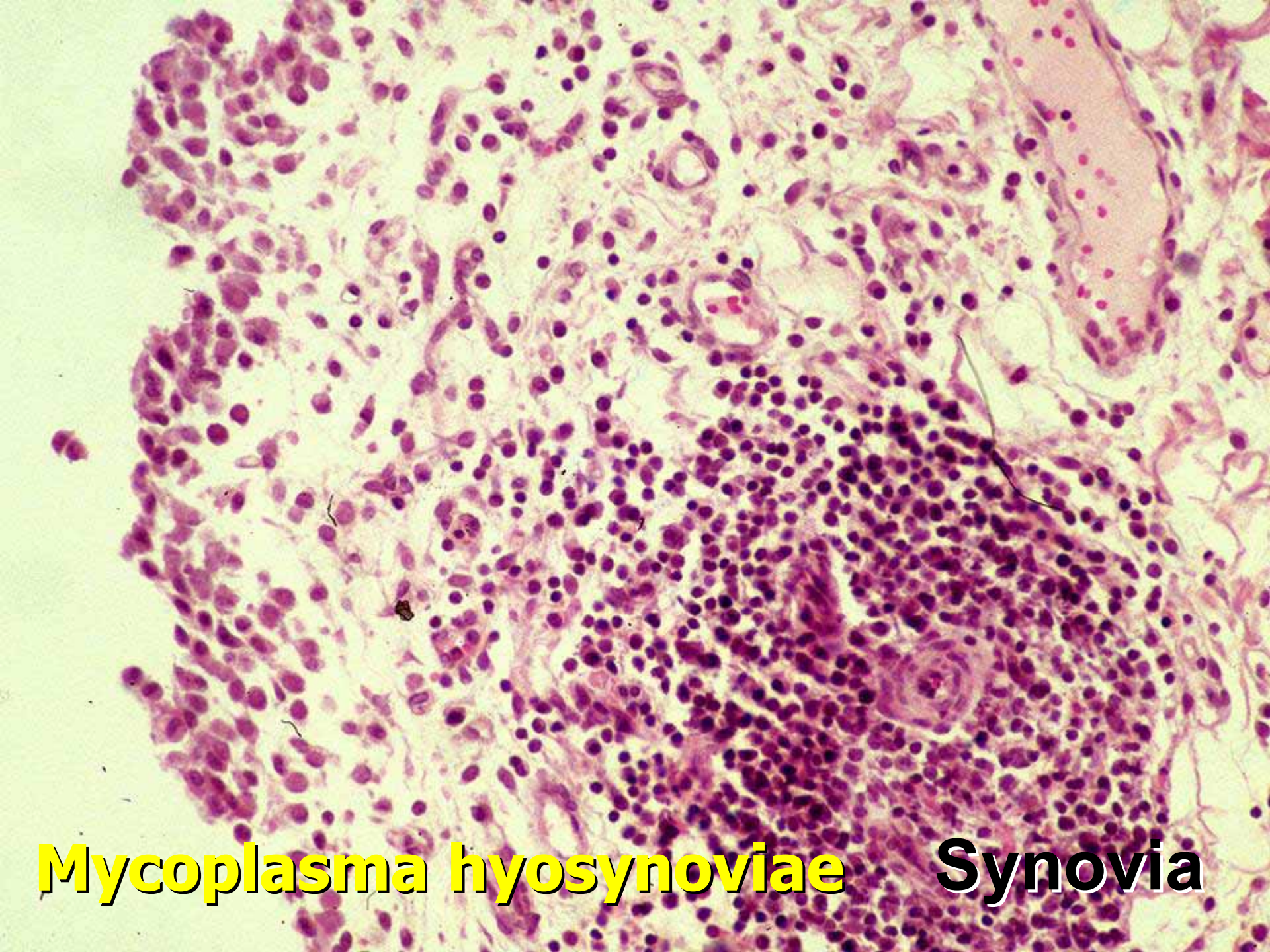


**Mycoplasma hyosynoviae**



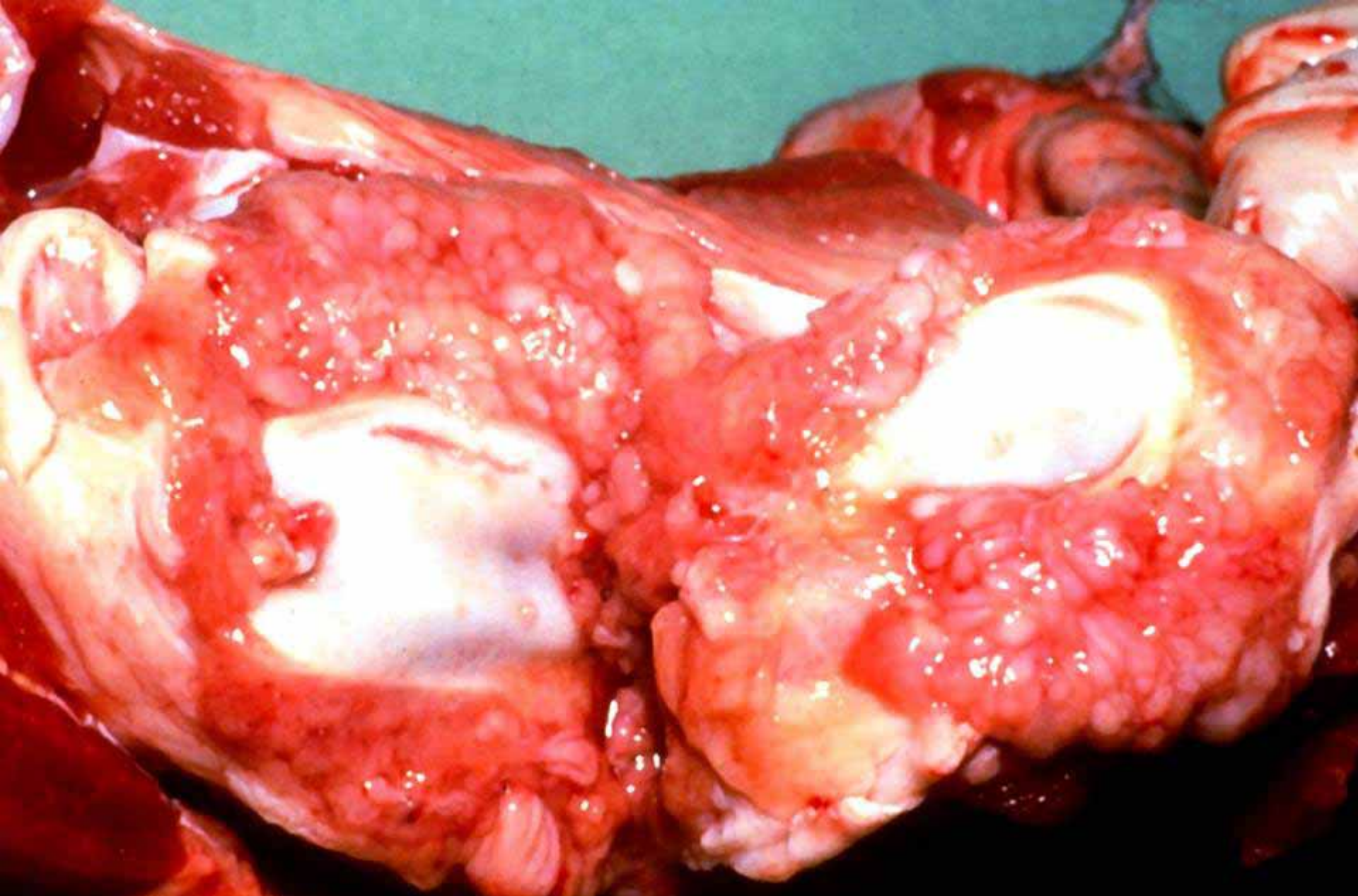
**Mycoplasma hyosynoviae**

**Synovia**

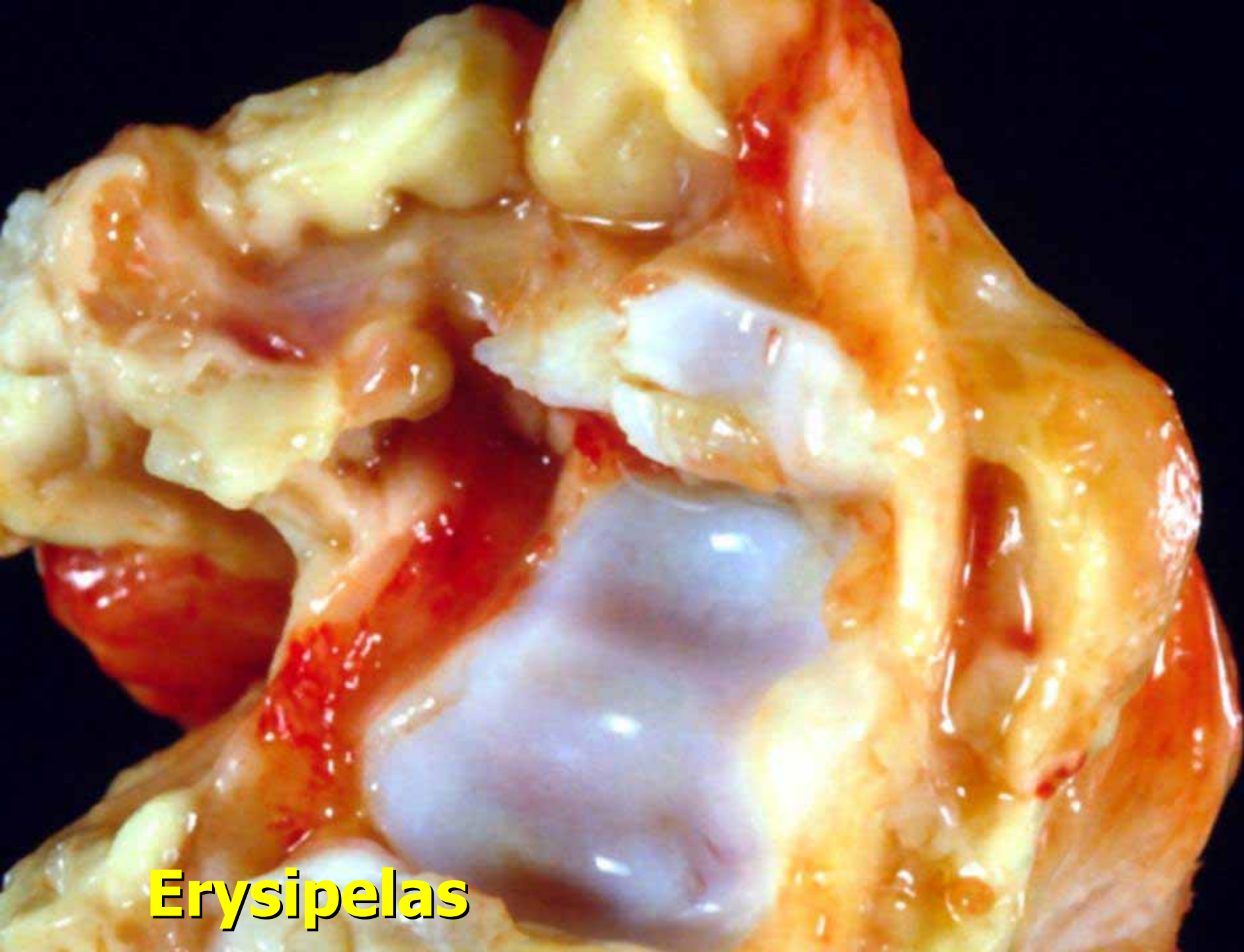


**Mycoplasma hyosynoviae**

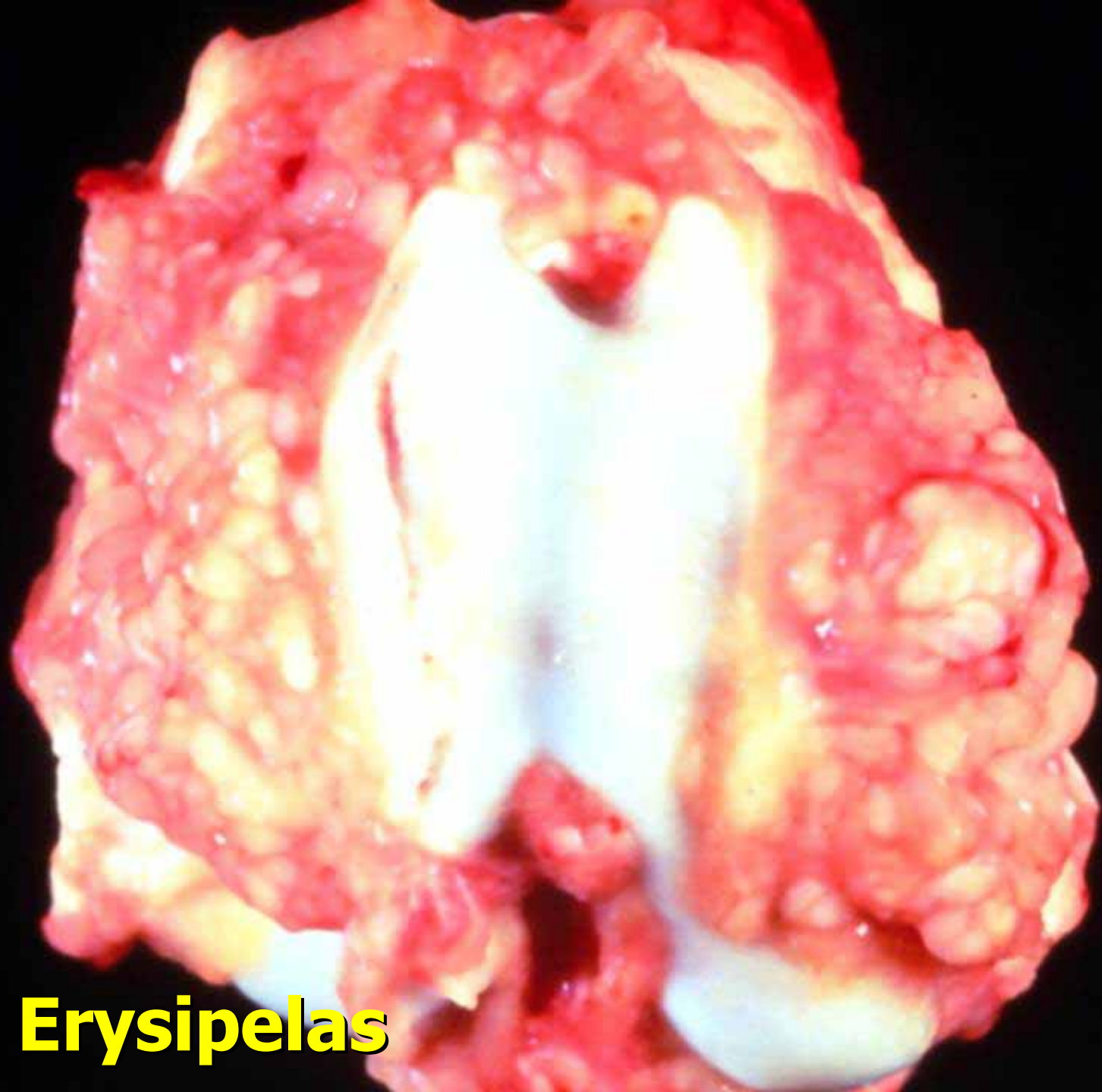
**Synovia**



**Mycoplasma hyosynoviae**



**Erysipeloid**



**Erysipelas**

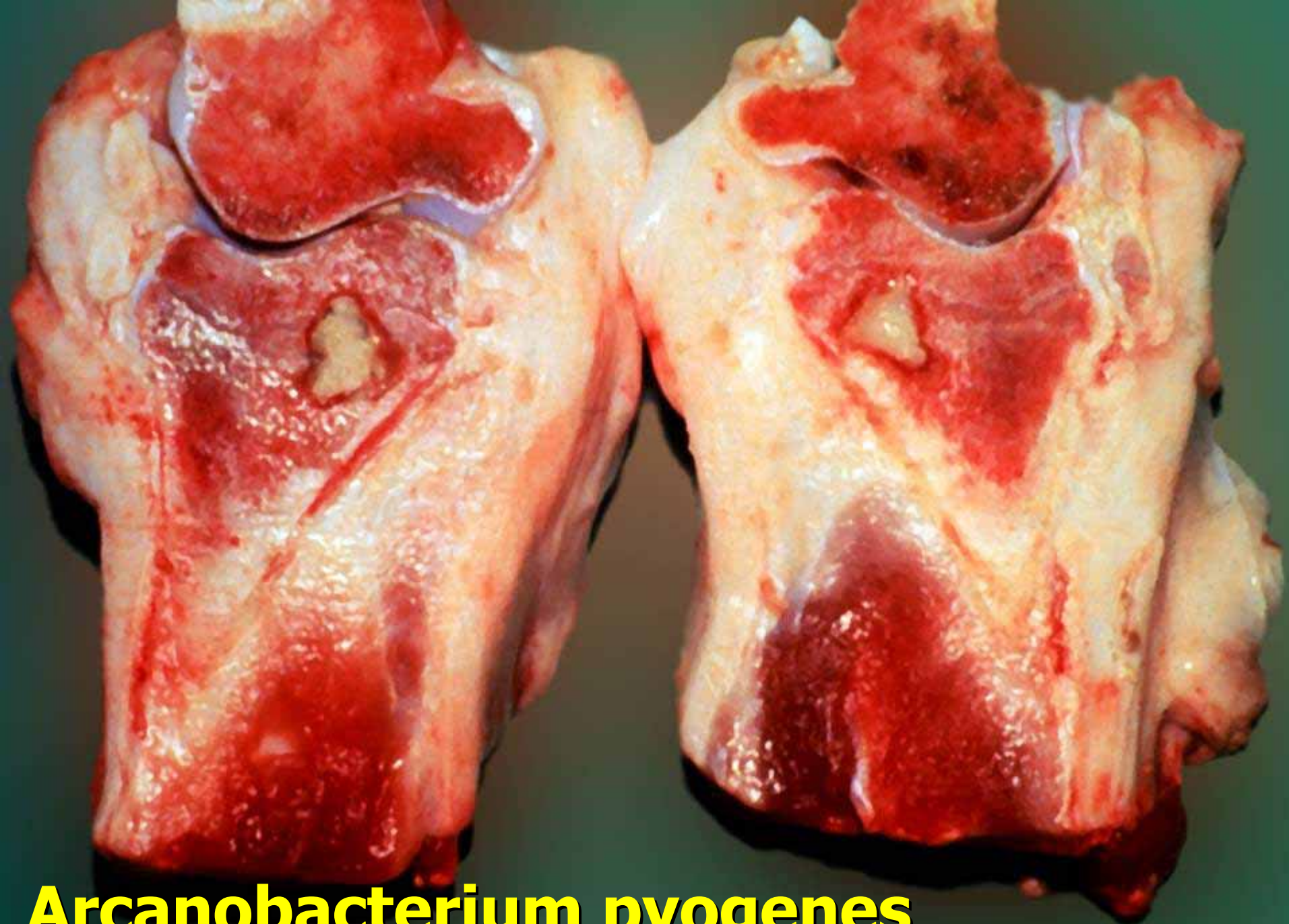


**Hemophilus parasuis**



**Streptococcus equisimilis**

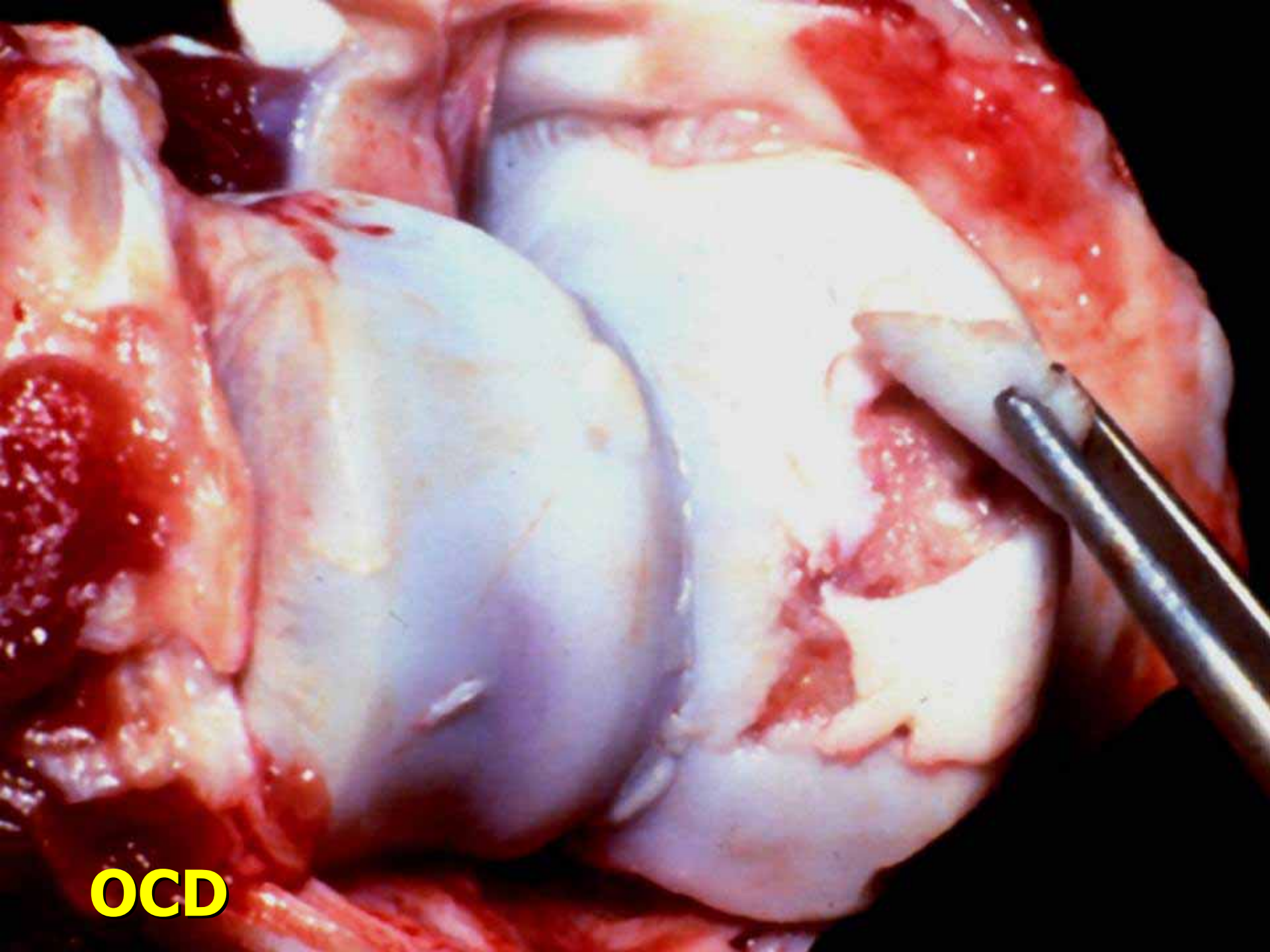




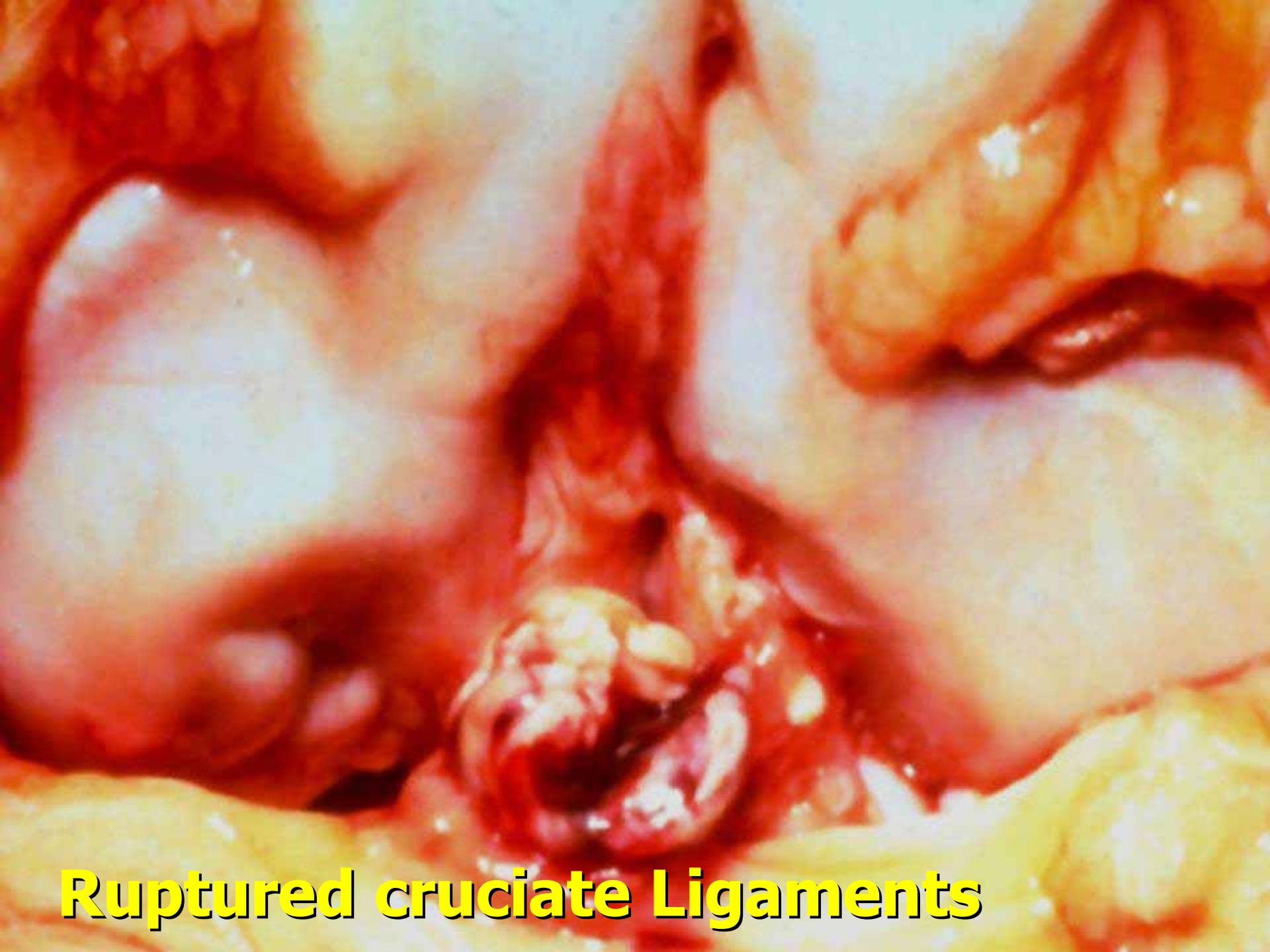
**Arcanobacterium pyogenes**



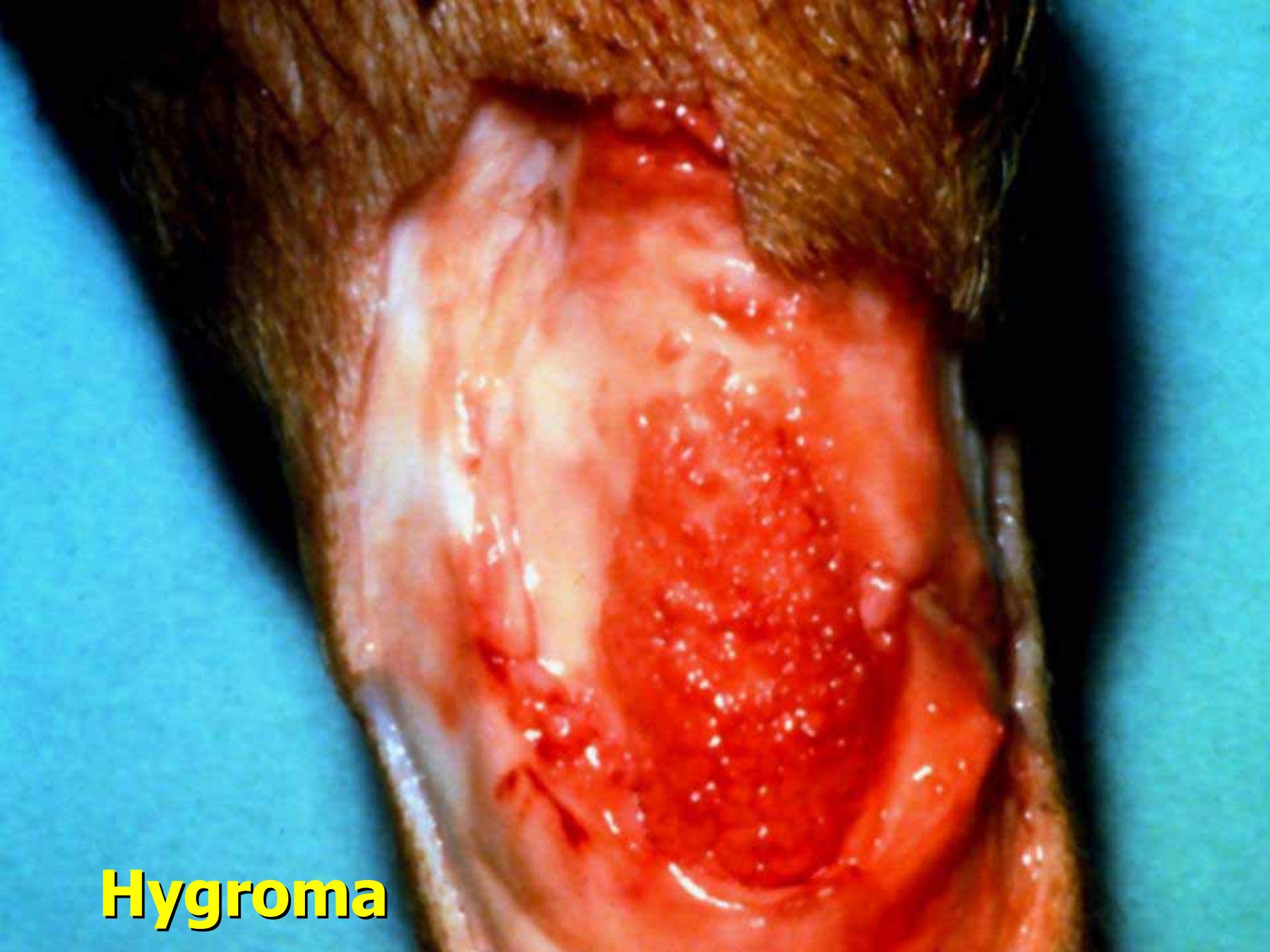
**OCD**



**OCD**



**Ruptured cruciate Ligaments**



**Hygroma**



**Anthrax**



**Clostridium septicum**

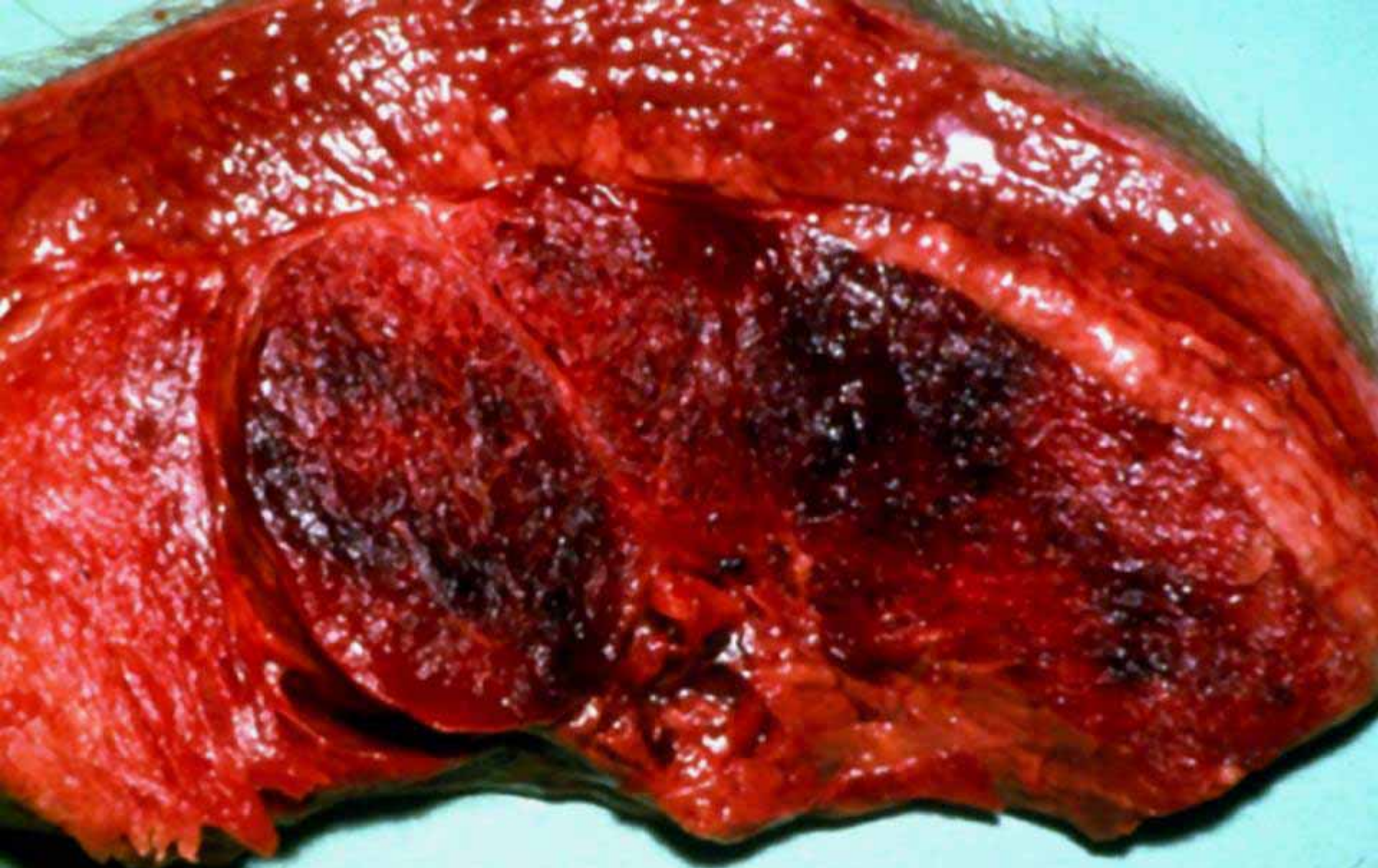


**Clostridium septicum**

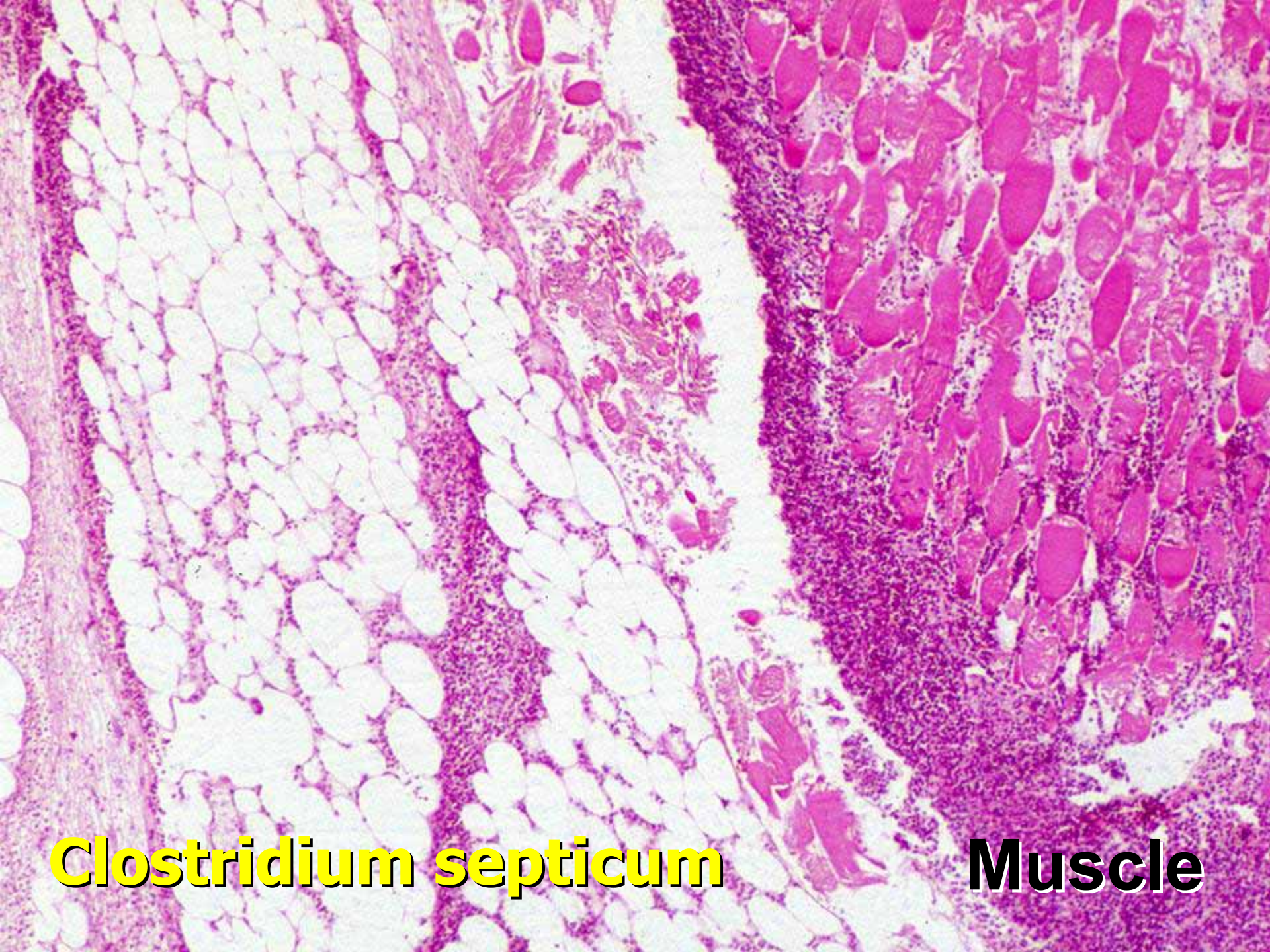




**Clostridium septicum**



**Clostridium septicum**



**Clostridium septicum**

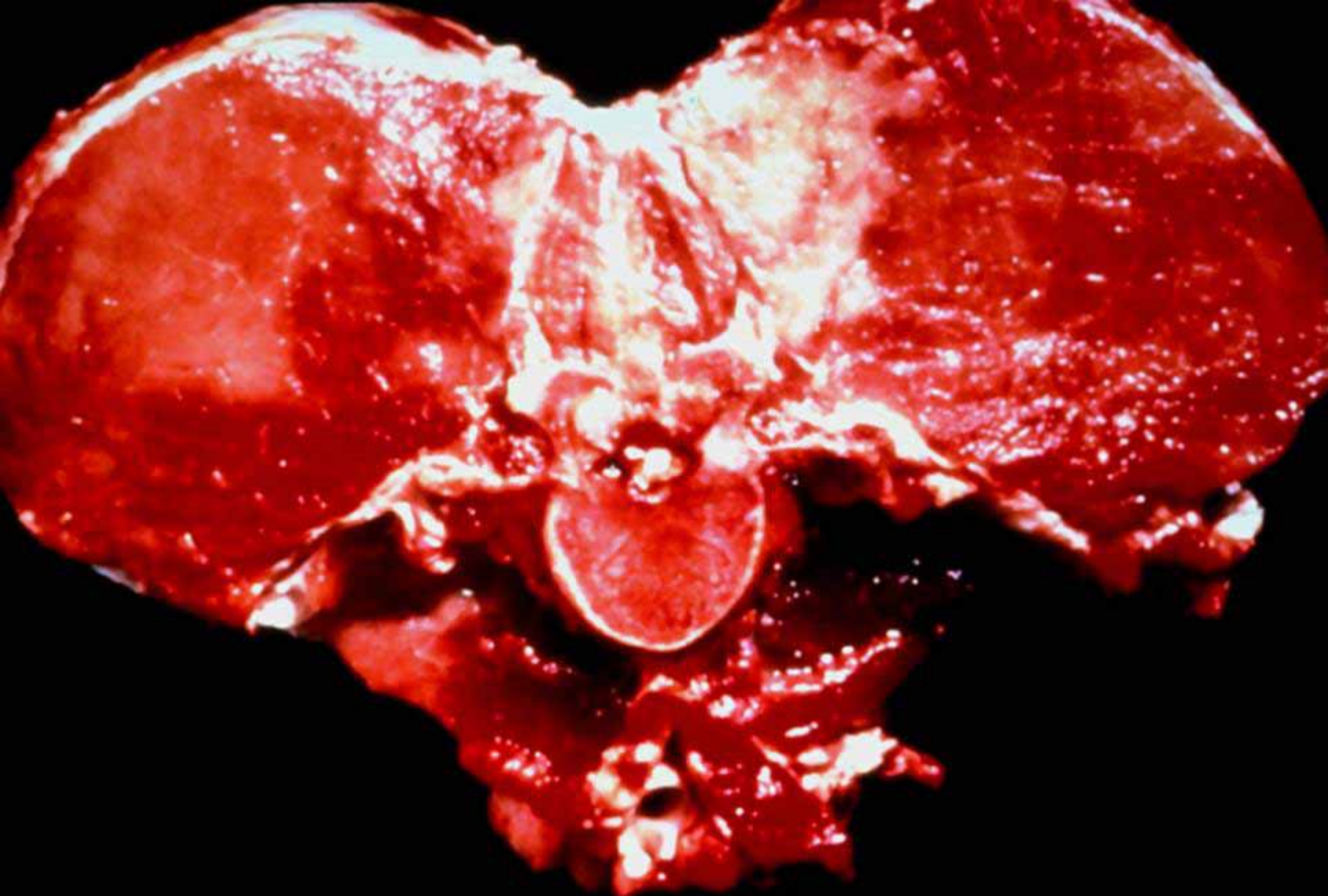
**Muscle**

# Porcine Stress Syndrome

- halothane gene (napole gene - Hampshire)
- DNA test
- single (?) recessive gene
- calcium transport deficit
- pig becomes red, splotchy → dies
- hyperthermia, acidosis
- rapid post-mortem autolysis
- associated with extreme muscling



**Porcine Stress Syndrome**



**Porcine Stress Syndrome**



**Monensin Intoxication**



**Dumbo pig**