

# Soft Tissue Calcification and Ossification

Exclude underlying  
bone disease

Exclude  
**OSSIFICATION**

# Ossification

## Look for:

- Trabeculation
- Cortico-medullary differentiation
- Fat on T1

# Soft Tissue Ossification

- Trauma
- Neoplastic
- Congenital

ST Ossification

# Traumatic

- Post Operative
- Within scars
- Myositis Ossificans
- Burns
- Paraplegia
- Head Injury

Ossification  
Traumatic

# Post operative

- Following joint arthroplasty-heterotopic
  - Rx-Radiation, NSAIDs and Etindronate

Ossification  
Traumatic

# Myositis Ossificans

- Direct blow
- Adductor longus-Rider's bone
- Brachialis-Fencer's bone
- Soleus-Dancer's bone

# Myositis Ossificans

- 4/52 Faint peripheral Cal
  - Central lacy pattern
- 5/12 Maturity
- >6/12 Regression
  - Separate from bone
- 1 year Usually disappears
  - Periosteal reaction remains

Post Traumatic Myositis Ossificans  
**Centrifugal Ossification**

Neoplastic Soft Tissue Ossification  
**Centripetal Ossification**

Ossification

Traumatic

# Tendons and Ligaments

- Calcification common, Ossification rare
- MCL knee - Pellegrini-Stieda
- Coracoclavicular
- Achilles tendon
- Supraspinatus
- Stylohyoid ligament XS - Eagle syn.

Ossification  
Traumatic

# Burns

- Commonly elbow
- Occurs distal to burn

Ossification

Traumatic

# Paraplegia

- Approx. 40%
- Usually in paralyzed parts
- Muscles, tendons and ligaments
- Large joints
- Often causes ankylosis

Ossification

# Neoplastic

- Parosteal osteosarcoma
- Liposarcoma
- Florid reactive periostitis
- Pseudomalignant osseous tumour of soft tissues
- Cortical desmoid
- Extra skeletal osteosarcoma
- Juxta cortical chondroma

Ossification

# Congenital

- Fibrodysplasia ossificans progressiva
  - (Myositis OP)
  - (Fibrositis OP)
- Melorheostosis
- Osteoma cutis

# CALCIFICATION

# Calcification

- By cause
- By shape / morphology
- By site
- By distribution
- By age
- By Aunt Mini

# Soft Tissue Calcification

## By Cause

- Metastatic
  - Disturbance in Calcium or Phosphate
- Generalized Calcinosis
  - Normal Calcium or Phosphate
- Dystrophic
  - Damaged or devitalized tissue

# Soft Tissue Calcification

By Cause

## Metastatic Calcification

- Hyperparathyroidism
- Hypoparathyroidism
- Renal Osteodystrophy
- Hypervitaminosis D
- Milk Alkali
- Sarcoidosis
- Massive bone destruction
  - Mets., Myeloma, Leukaemia

# Soft Tissue Calcification

By Cause

## Generalized Calcinosis

- Collagen disorders
- Idiopathic tumoral calcinosis
- Idiopathic calcinosis (interstitialis) universalis

# Soft Tissue Calcification

By Cause

Generalized Calcinosis

## Collagen Disorders

- Systemic Lupus Erythematosus
- Dermatomyositis
- Scleroderma
- Raynauds
- CREST
- Ehlers Danlos

# Soft Tissue Calcification

By Cause

Generalized Calcinosis

## Collagen Disorders

- Great variety of appearances
- Overlap in diseases and patterns MCTD
- May be local or generalized
- Linear, lacy, tumoral
- Deep or superficial

# Soft Tissue Calcification By Cause

## Generalized Calcinosis

### Idiopathic Tumoral Calcinosis

- 10-30Yrs, black
- Elevated phosphate
- Single or multiple firm tumour like painless
- Hips, Shoulders, Elbows, Ankles
- Dense, Flocculent, Amorphous,
- 1-20cm, fluid levels
- Dx of exclusion

# Soft Tissue Calcification By Cause

## Generalized Calcinosis

### Idiopathic Calcinosis Universalis

- Infants and children, rare
- Initially subcutaneous fat of extremities
- Longitudinal bands
- DDx

Hyperparathyroidism

Dermatomyositis

Fat necrosis

Extravasation of Ca gluconate

# Soft Tissue Calcification

By Cause

## Dystrophic Calcification

- Neoplastic
- Trauma
- Inflammatory

# Soft Tissue Calcification

By Cause

Dystrophic Calcification

## Neoplastic

- Synovial sarcoma
- Liposarcoma
- Any less commonly

## Calcification

# By Shape

## Morphologic descriptive terms

- Calcinosis universalis
  - Widespread
- Calcinosis circumscripta
  - Localized
- Tumoral calcinosis
  - Mass like
- Add idiopathic prefix for a single disease entity

Calcification

By Shape

# Morphology

- Linear and Curvilinear
- Conglomerate (Tumoral)
- Sheets

# Calcification

## By Shape

# Linear and Curvilinear

- Arterial
  - Atheroma, Aneurysm, Diabetes, HPT, Progeria, Werner's
- Nerve
  - Leprosy, Neurofibromatosis
- Tendon and Ligament
  - Tendinitis, AS, Ochronosis, Fluorosis, Diabetes
- Injection
  - Bismuth, Arsenic, Quinidine
- Parasite
  - Cysticercosis, Guinea worm, Loa Loa, Armillifer armillatus

Calcification

By Shape

# Tumoral calcinosis

## DDX

- Idiopathic
- Renal osteodystrophy
- Gout
- Hypervitaminosis D
- Hyperparathyroidism
- Collagen vascular Disease

Calcification

By shape

# Sheets of Calcification

- Dermatomyositis
- Fibrodysplasia ossificans progressiva
- Venous stasis

Calcification

By shape

# Some characteristic shapes

- Circle or oval, lucent centre
  - Phlebolith, Spherule, Cysterci
- Reticulated
  - Dermatomyositis

## Calcification

# By site

- Generalized
- Localized
  - Periarticular
  - Tendons and bursa
  - Finger tips
  - Articular cartilage
  - Disc
  - Pinna

Calcification

By site

# Periarticular

- Hyperparathyroidism
- Renal osteodystrophy
- Milk alkali syndrome
- Hypervitaminosis D
- Collagen vascular disease
  
- Exclude intraarticular

Calcification

By site

# Tendons and Bursa

- Calcium hydroxyapatite deposition disease
- Calcium pyrophosphate dihydrate deposition disease

# Calcification

By site

Tendons and Bursa

## CPPD

- Linear
- Articular
- Achilles, Quads, Tri
- Ass. arthritis

## MCPCDD

## HADD

- Rounded
- Amorphous
- Tendons and Bursa
- Rotator cuff

Calcification

By site

# Finger Tips

- Scleroderma
- CREST
- Dermatomyositis
- Trauma

Calcification

By site

# Articular cartilage

- Osteoarthritis
- CPPD
- HADD
- Hyperparathyroidism
- Haemochromatosis

Calcification

By site

# Pinna

- Thermal
- Endocrine
- Perichondritis
- CPPD
- Gout
- Dermatomyositis
- Alkaptonuria

Calcification

By site

# Intervertebral disc

- Trauma
- CPPD
- Hyperparathyroidism
- Immobilization
- Alkaptonuria

Calcification

By site

# Intervertebral Disc Calcification

- Nucleus pulposus
- Annulus fibrosus
  - Inner
  - Outer

# Calcification

By site

Intervertebral Disc Calcification

## Nucleus Pulposus

- Degenerative spondylosis (Dorsal)
- Ankylosing spondylitis
- Juvenile chronic arthritis
- DISH
- Gout
- Idiopathic
  - Children - transient
  - Adults - persistent

# Calcification

By site

Intervertebral Disc Calcification

## Annulus Fibrosus

- Inner fibres
  - Alkaptonuria (Ochronosis)
- Outer fibres
  - CPPD
  - Haemochromatosis
  - Following spinal fusion

Calcification

By site

# Distribution of Collagen Vascular disease

- Proximal
  - Dermatomyositis
- Distal
  - Ehlers Danlos
  - Scleroderma
- Lower limb
  - SLE

Calcification

# By age

- Idiopathic calcinosis universalis
- Dermatomyositis
- Hyperparathyroidism
- Osteoma cutis
- Albright's hereditary osteodystrophy

By Aunt Minnie