Calcific Tendonitis

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Definition

Shoulder disorder noted for:

- Severe pain, usually worse in the a.m.
- Sometimes with loss of motion (ROM)
  - Secondary to pain
- Calcific lesion located within the tendon

Epidemiology

- Women > men (slightly)
- Ages 40–60 more common

Etiology

- Unknown etiology
- Metabolic and endocrine disorders have been implicated:
  - Thyroid
  - Diabetes
  - Genetic predisposition

Pathology

- Degenerative calcification
  - Long-term impingement, aging, and decreased vascularity changes to microstructure of tendon fibers.
  - Degeneration of fibers results in necrosis and calcification.
  - Supraspinatus most commonly affected.
- Reactive calcification
- Calcification occurs within the tendon itself typically 1.5–2.0 cm from tendon insertion

Diagnosis

- History and physical exam
  - Severe pain
- Spontaneous onset
- Usually worse in the morning and/or at night
- May also have stiffness and decreased ROM
  - Usually secondary to pain
- Radiographs (Fig. 10.1)
  - Calcification seen in area of the tendon, most often in supraspinatus
  - Two radiographic types:
    - Type 1 – fluffy appearance with poorly defined periphery
    - Type 2 – discrete homogeneous deposits

The original version of this chapter was revised. An erratum to this chapter can be found at https://doi.org/10.1007/978-3-319-52567-9_159

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A.E.M. Eltorai et al. (eds.), *Orthopedic Surgery Clerkship*, DOI 10.1007/978-3-319-52567-9_10

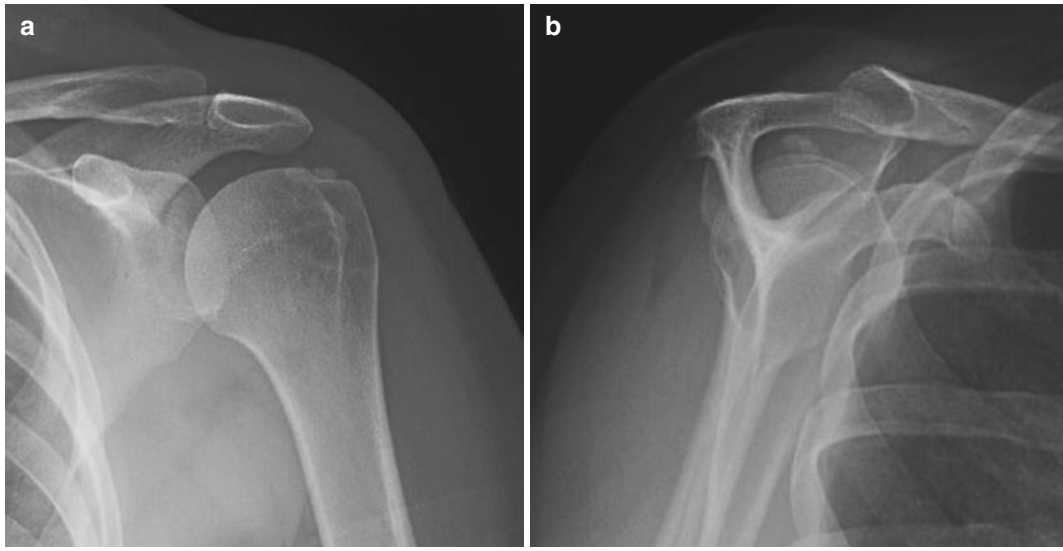

Fig. 10.1 Shoulder radiographs. (**a**) AP; (**b**) scapular Y, axillary lateral

  - Osteolysis of greater tuberosity seen in a variant form of the condition
- MRI
  - If rotator cuff tear suspected
  - T1 – calcifications manifest as decreased signal
  - T2 – increased intratendinous signal with edema
  - May help localize for barbotage procedure if performed intraoperatively during rotator cuff repair

Stages: Reactive Calcification

- Precalcific
  - No symptoms yet
  - Fibrocartilaginous metaplasia of tendon tissue
- Calcific
  - Formative phase
    - Appearance of chondrocytes within tendon tissue
    - Well-delineated, dense homogeneous calcification
    - Calcium excreted from cells into chalky form
  - Resting phase
    - Fibrocartilaginous tissue borders calcium deposit indicating calcium deposition has stopped
    - Painless
  - Resorptive phase
    - Spontaneous resorption of calcium.
    - Vascular invasion at periphery with calcium granuloma.
    - Most painful. Calcification appears like toothpaste.
- Postcalcific
  - Calcification disappears with appearance of vascular channel remodeling calcium granulation tissue with maturing fibroblasts.
  - Rotator cuff tendon replaces the void.
  - Painless.

Treatment

- Nonoperative
  - Physical therapy
    - Prevent loss of motion
    - Strengthen cuff
    - Therapy modalities:

    - Heat
    - Cryotherapy
    - ROM
    - Pendulum
  - NSAIDs
  - Corticosteroid subacromial injections (SAI)
  - Needling (barbotage)
    - Performed with U/S guidance
    - Can be combined with subacromial injection
- Operative
  - Indicated for failure of conservative management especially during the formation phase
  - Arthroscopic or open debridement with extraction of the deposit:
    - Palpate rotator cuff for calcium deposits.
    - Rotator cuff should be assessed at the time of surgery for competency after removal of large deposits.
    - Postoperative pain may continue for weeks.

Outcomes

- In a 2013 study comparing barbotage + SAI vs. isolated SAI, the barbotage group had decreased calcification size (11.6 mm vs 5.1 mm decrease), more cases of total resorption (13 vs 6), improved constant score at 1 year (86 vs 74), lower rates of secondary barbotage, and similar DASH and WORC scores.
- Outcomes worse in the osteolysis variant.

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