



POCKET **RADIOLOGIST**TM

Musculoskeletal

Top 100 Diagnoses

Stoller

Tirman

Bredella



PocketRadiologist™

Musculoskeletal

100 Top Diagnoses

David W Stoller MD

Director, California Advanced Imaging and MRI
California Pacific Medical Center
San Francisco, California

Director, National Orthopaedic Imaging Associates
San Francisco, California

Phillip F J Tirman MD

National Orthopedic Imaging Associates
Greenbrae, California

Co-director, Musculoskeletal MRI
California Pacific Medical Center
San Francisco, California

Miriam A Bredella MD

Department of Radiology
University of California San Francisco
San Francisco, California

Research contribution: Gen Maruyama MD
Jana Crain MD

With 200 drawings and radiographic images

Drawings: Salvador Beltran MD
Lane R Bennion MS
James A Cooper MD

Image Editing: Ming Q Huang MD
Melissa Petersen



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Preface

The **PocketRadiologist™** series is an innovative, quick reference designed to deliver succinct, up-to-date information to practicing professionals “at the point of service.” As close as your pocket, each title in the series is written by world-renowned authors, specialists in their area. These experts have designated the “top 100” diagnoses in every major body area, bulleted the most essential facts, and offered high-resolution imaging to illustrate each topic. Selected references are included for further review. Full color anatomic-pathologic computer graphics model many of the actual diseases.

Each **PocketRadiologist™** title follows an identical format. The same information is in the same place—every time—and takes you quickly from key facts to imaging findings, differential diagnosis, pathology, pathophysiology, and relevant clinical information.

PocketRadiologist™ titles are available in both print and hand-held PDA formats. Our first modules feature Brain, Head and Neck, and Orthopedic (Musculoskeletal) Imaging. Additional titles include Spine and Cord, Chest, Breast, Vascular, Cardiac, Pediatrics, Emergency, and Genital Urinary, and Gastro Intestinal. Enjoy!

Anne G Osborn MD
Editor-in-Chief, Amirsys Inc

PocketRadiologist™

Musculoskeletal

Top 100 Diagnoses

The diagnoses in this book are divided into 9 sections in the following order:

Shoulder
Elbow
Wrist and Hand
Hip
Knee
Ankle and Foot
Bone Marrow
Bone Tumors
Soft Tissue Tumors

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PocketRadiologist™

Musculoskeletal

100 Top Diagnoses

SHOULDER

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Rotator Cuff Tendinopathy



A coronal T2-weighted fast spin echo image with fat saturation demonstrates a heterogeneous mildly thickened supraspinatus tendon consistent with tendinosis with mild reactive subacromial bursitis present.

Key Facts

- Overuse degeneration and tearing of the rotator cuff
- May occur secondary to impingement or acute trauma
- Most common reason for MRI referral of the shoulder
- May be painful even without tendon tear

Imaging Findings

MR Findings

- Increased signal intensity on all pulse sequences
- Tendon usually thickened
- Tendon often inhomogeneous
- Partial tear seen as fluid entering tendon but only part of the way through
- Through-and-through (full thickness) tear demonstrated as fluid extending through gap in tendon with variable retraction
- Full thickness tear may be associated with fatty atrophy of the muscles in chronic cases
- Tears best seen on coronal and sagittal images

Differential Diagnosis

Calcific Tendinitis

- Tendon may be thickened and is often decreased in signal intensity

Intratendinous Cyst

- Thickened tendon but cyst is visible on T2-weighted images
- Associated with partial tear of rotator cuff

Pathology

General

- Etiology-Pathogenesis
 - Overuse degeneration and tearing of the rotator cuff

Rotator Cuff Tendinopathy



A 2nd patient suffering from clinical impingement demonstrates tendinosis.

- Most commonly secondary to impingement syndrome (curved acromion plus overuse)
- Can occur in collagen vascular diseases along with tendinosis of other tendons
- May occur acutely but usually in the setting of preexisting tendinosis

Gross Pathologic or Surgical Features

- Usually thickened, indurated tendon
- Break in integrity of tendon in partially torn and torn tendons
- Partial tear may be bursal surface, articular surface or interstitial

Microscopic Features

- Collagen degeneration without significant influx of inflammatory cells: "Tendinosis" is preferred term over tendinitis
- Break in integrity of tendon in partially torn (bursal, articular or interstitial) and through-and-through torn tendons
- Fatty infiltration of muscle tissue in chronically torn tendons

Clinical Issues

Presentation

- Insidious onset of pain in adult patient with impingement syndrome
- Pain in the setting of athletics in the case of internal impingement: Younger patient
- Peak age 40 and above for impingement
- Posttraumatic continued pain

Treatment & Prognosis

- Physical therapy
- Subacromial decompression for impingement

Selected References

1. Gartsman GM: Arthroscopic management of rotator cuff disease. J Am Acad Orthop Surg. 6(4): 259-66, 1998
2. Fritz RC et al: MR imaging of the rotator cuff. Magn Reson Imaging Clin N Am. 5(4): 735-54, 1997
3. Neer CD et al: Cuff-tear arthropathy. J Bone Joint Surg. 65(9): 1232-44, 1983

Rotator Cuff Full Thickness Tear



Full thickness tear of the rotator cuff with tendinous gap.

Key Facts

- Overuse degeneration and complete tearing of the rotator cuff
- May occur secondary to impingement or acute trauma
- Seen as interruption of the decreased signal intensity tendon usually involving the distal tendon anteriorly or sometimes involving the relatively avascular "critical zone"

Imaging Findings

General Features

- A tear or gap in the tendon which can become filled with joint or bursal fluid or granulation tissue

MR Findings

- Fluid signal intensity filling a gap in the tendon which is best seen with fat saturated fast spin echo T2-weighted images
- Variable retraction and degeneration of the tendon edges seen
- Full thickness tear may be associated with fatty atrophy of the muscles in chronic cases
- Tears best seen on coronal and sagittal images
- Associated with fluid (increased signal intensity on fat saturated fast spin echo T2-weighted images) with the subacromial bursa
- Associated with fluid within the subcoracoid bursa especially with anterior supraspinatus tears and rotator interval tears

Other Modality Findings

- Plain film arthrograms and MR arthrograms demonstrate fluid extravasating from the joint into the subacromial bursa after contrast injection

Differential Diagnosis

Intratendinous Cyst

- Thickened tendon but cyst is visible on T2-weighted images



A T2-weighted coronal image demonstrates a full thickness tear of the supraspinatus tendon with retraction.

Partial Tear of Rotator Cuff

- Fluid within but not through-and-through the tendon

Pathology

General

- Etiology-Pathogenesis
 - Overuse degeneration and complete tearing of the rotator cuff
 - Most commonly secondary to Impingement Syndrome (curved acromion plus overuse)
 - Can occur in collagen vascular diseases along with tears of other tendons
 - May occur acutely but usually in the setting of preexisting tendinosis

Gross Pathologic or Surgical Features

- Usually thickened, indurated tendon edges
- Break in integrity of tendon

Microscopic Features

- Break in integrity of tendon
- Preexisting collagen degeneration without significant influx of inflammatory cells: "Tendinosis" is preferred term over tendinitis
- Fatty infiltration of muscle tissue in chronically torn tendons

Clinical Issues

Presentation

- Peak age 40 and above especially for impingement
- Insidious onset of pain in adult patient with impingement syndrome
- Pain in the setting of athletics in the case of internal impingement – younger patient
- Posttraumatic continued pain

Rotator Cuff Full Thickness Tear

Treatment & Prognosis

- Depends on level of activity and cause of tear
- Impingement: Usually subacromial decompression (acromioplasty) and tendon repair unless massive cuff tear or those associated with atrophy
- Massive cuff tears and those associated with atrophy treated with debridement

Selected References

1. Handelberg FW: Treatment options in full thickness rotator cuff tears. Acta Orthop Belg. 67(2): 110-5, 2001
2. Murrell GA et al: Diagnosis of rotator cuff tears. Lancet. 357(9258): 769-70, 2001
3. Stoller DW et al: The Shoulder, in Magnetic Resonance Imaging in Orthopaedics and Sports Medicine. J.B. Lippincott: Philadelphia. 597-742, 1997