Pectoralis Major Tear

Clinical Guidelines for Medical Necessity Review

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Important Notices

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Other Notices:

Guideline Information:

Specialty Area: Diseases & Disorders of the Musculoskeletal System (M00-M99)
CarePath Group: Shoulder
CarePath Name: Pectoralis Major Tear
Type: [**X**] Adult (18+ yo) | [_] Pediatric (0-17yo)

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Care Path Clinical Discussion

Pectoralis major tears are rare. The exact incidence rate is difficult to determine, but spontaneous ruptures have been increasing over recent years. This increase may be due to a greater interest in fitness and recreational sports and, potentially, the use of anabolic steroids.[1-3] Tears occur most commonly in active males between ages 20-40 years.[1,2,4,5] The most common cause is indirect trauma from weight lifting (i.e., bench press), although it can occur in other sports.[1,2,4,5] Less commonly, similar injuries occur in elderly, functionally-dependent persons from positioning and transferring.[6]

Diagnosis can usually be determined from the history and physical examination, although misdiagnosis has been reported.[3] While radiography is helpful in the event of an avulsion fracture[2], magnetic resonance imaging (MRI) is the preferred modality for determining the exact injury location for surgical planning.[2,5,7] The majority of pectoralis major tears are described as complete tears or avulsions and occur at the tendon insertion.[4,5] Surgical primary repair is the usual recommendation for these injuries and should be performed acutely (less than 6 weeks after injury) for optimal outcomes (i.e., return to sport).[2,5,8] Nonoperative treatment may be acceptable for proximal tears, low-grade partial tears, tears in sedentary patients, and tears at the myotendinous junction.[2,3-5]

The information contained herein gives a general overview of the pathway of pectoralis major tears, beginning with initial presentation, recommended assessments, and treatment options as supported by the medical literature and existing guidelines. It should be noted that the care of musculoskeletal injuries can be complex. The information below is meant to support clinical decision making in adult patients, not provide standard of care. It is not necessarily applicable to every case, as the entire clinical picture (including comorbidities, history, etc.) should be considered.

Key Information

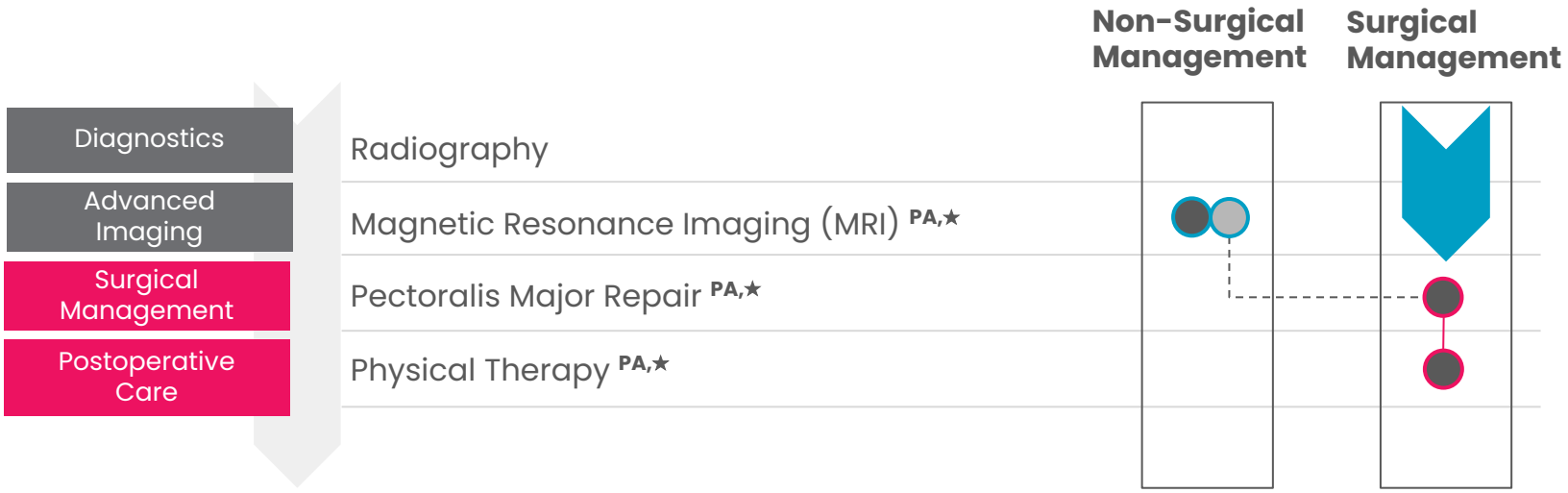
- ➢ Most patients will first present with symptoms to their orthopedist.
- ➢ Pectoralis major tendon rupture is a rare injury. 50% of injuries occur in athletes.[9]
- ➢ MRI of the chest is the preferred method for advanced imaging as it is useful for surgical planning. [2,5,7]
- ➢ Surgical primary repair is the usual recommendation for complete tears or avulsions, which make up the majority of cases.[2,4,5,8]

Definitions

Pectoralis major: a superficial, fan-shaped muscle that makes up the majority of the chest. It contributes to the thoracobrachial motion.

Pectoralis Major Tear

What is a "Cohere Care Path"?
These Care Paths organize the services typically considered most clinically optimal and likely to be automatically approved. These service recommendations also include the suggested sequencing and quantity or frequency determined clinically appropriate and medically necessary for the management of most patient care scenarios in this Care Path's diagnostic cohort.



Key

PA = Service may require prior authorization
★ = Denotes preferred service
AND = Services completed concurrently
OR = Services generally mutually exclusive

= Non-surgical management prior authorization group of services
= Surgical management prior authorization group of services
= Subsequent service
= Management path moves to a different management path

Care Path Diagnostic Criteria

Disease Classification

Pectoralis Major Tear

ICD-10 Codes Associated with Classification

ICD-10 Code	Code Description/Definition
M25.511	Pain in right shoulder
M25.512	Pain in left shoulder
M25.519	Pain in unspecified shoulder
M79.601	Pain in right arm
M79.602	Pain in left arm
M79.603	Pain in arm, unspecified
M79.621	Pain in right upper arm
M79.622	Pain in left upper arm
M79.629	Pain in unspecified upper arm
S29.01	Strain of muscle and tendon of thorax
S29.011	Strain of muscle and tendon of front wall of thorax
S29.012	Strain of muscle and tendon of back wall of thorax
S29.019	Strain of muscle and tendon of unspecified wall of thorax
S29.09	Other injury of muscle and tendon of thorax
S29.091	Other injury of muscle and tendon of front wall of thorax
S29.092	Other injury of muscle and tendon of back wall of thorax
S29.099	Other injury of muscle and tendon of unspecified wall of thorax
S29.8	Other specified injuries of thorax
S29.9	Unspecified injury of thorax
S43.49	Other sprain of shoulder joint
S43.491	Other sprain of right shoulder joint

S43.492	Other sprain of left shoulder joint
S43.499	Other sprain of unspecified shoulder joint

Presentation and Etiology

Causes and Risk Factors

Most cases of pectoralis major tear involve eccentric loading, and the most common cause identified is bench press.[1,2] Other associated activities include wrestling, jiu-jitsu, football, gymnastics, and rugby.[1,2,4] Risk factors include activities that involve eccentric loading of the muscle and male sex.[1,2]

Clinical Presentation

Patients with a pectoralis major tear usually present with a history of a specific incident or injury. History includes:[2,3,5]

- Acute onset of pain
- Tearing sensation
- Heard or felt a pop
- Swelling
- Weakness
- Painful shoulder range of motion (ROM)
- Bruising in the biceps and chest (the biceps tendon is underneath the pec major)

Typical Physical Exam Findings

Comparison with the contralateral side is crucial. The following may present on physical examination, keeping in mind that swelling may obstruct some[2,3,5]:

- Visualization of the anterior chest wall, axilla, and arm:
    - Swelling
    - Ecchymosis
    - Deformity (exacerbated with resisted internal rotation)
    - Loss of axillary fold
- Limited shoulder ROM due to pain
- Weakness with adduction and internal rotation
- Weakness with chest press motion

Typical Diagnostic Findings

Normal radiograph findings.

CarePath Services & Medical Necessity Criteria

Advanced Imaging

Service: Magnetic Resonance Imaging (MRI) without contrast

General Guidelines

- **Units, Frequency, & Duration:** None.
- **Criteria for Subsequent Requests:** None.
- **Recommended Clinical Approach:**
  - MRI is sensitive to strains and low-grade tears[10]
  - MRI can:
    - Help determine exact location and extent of tear (myotendinous vs. tendon-bone tear)[2,3]
    - Confirm diagnosis and thus avoid surgical delay[3]
  - MRI of the chest is preferred
- **Exclusions:** None.

Medical Necessity Criteria

Indications

➔ **MRI** is considered appropriate if **ANY** of the following is **TRUE**[2,3,10-11]:

◆ The patient has **ANY** positive findings from the presentation list:

- Acute onset of pain
- Tearing sensation
- Heard or felt a pop
- Swelling
- Weakness
- Painful shoulder range of motion (ROM)

◆ The patient has **ANY** positive findings from the physical exam list:

- Visualization of the anterior chest wall, axilla, and arm:
  - Swelling
  - Ecchymosis
  - Deformity
  - Loss of axillary fold
- Limited shoulder ROM due to pain
- Weakness with adduction and internal rotation

Non-Indications

➔ **MRI** may not be appropriate if **ANY** of the following is **TRUE**[12]**:**

- Non-compatible implanted devices
- Metallic intraocular foreign bodies
- Claustrophobia

Site of Service Criteria

Outpatient

Procedure Codes (HCPCS/CPT)

HCPCS Code	Code Description/Definition
71550	Magnetic resonance imaging (MRI) of chest without contrast material
71551	Magnetic resonance imaging (MRI) of chest with contrast material
71552	Magnetic resonance imaging (MRI) of chest without contrast material, followed by contrast material, and further sequences

Surgical Management

Service: Pectoralis Major Repair

General Guidelines

- **Units, Frequency, & Duration:** None.
- **Criteria for Subsequent Requests:** None.
- **Recommended Clinical Approach[2-3,5,8]:**
    - Repair is recommended for most tears for optimal functional and cosmetic outcomes.
    - Repair within 3-6 weeks of injury is recommended.
    - There is a lack of high-quality data to support recommending an approach.
    - Several approaches are described in the literature, but none are specifically recommended over others.
- **Exclusions:** None.

Medical Necessity Criteria

Indications

➔ **Pectoralis major repair** is considered appropriate if **ANY** of the following is **TRUE**[2-3,13]:

- ◆ Acute (less than 6 weeks after injury) avulsion or complete tear of the pectoralis major tendinous insertion
- ◆ Acute (less than 6 weeks after injury) complete tear of the musculotendinous region
- ◆ Most complete tears of delayed presentation

Non-Indications

Chronicity of tears should not prevent surgical repair.

➔ **Pectoralis major repair** should **NOT** be considered if **ANY** the following is **TRUE**[2-3,13]:

- ◆ Patients with lower activity demands or who are not expected to achieve a high level of postoperative function.
- ◆ Patients who do not wish to undergo surgery.
- ◆ Patients with local infection or other general contraindications.

Site of Service Criteria

Outpatient

Procedure Codes (HCPCS/CPT)

HCPCS Code	Code Description/Definition
24341	Repair, tendon or muscle, upper arm or elbow, each tendon or muscle, primary or secondary for this procedure

Surgical Risk Factors

Patient Medical Risk Stratification

Patient Risk Score	Patient Characteristic	Min Range	Max Range	Guidance
1- Very Low Risk	No known medical problems			
2- Low Risk	Hypertension		180/110 mm Hg	
2- Low Risk	Asthma	peak flow >80% of predicted or personal best value		
2- Low Risk	Prior history of alcohol abuse			Screen for liver disease and malnutrition
2- Low Risk	Prior history of tobacco use			
3- Intermediate Risk	Asthma	peak flow <80% of predicted or personal best value		
3- Intermediate Risk	Active alcohol abuse			
3- Intermediate Risk	Age	65	75	
3- Intermediate Risk	History of treated, stable coronary artery disease (CAD)			
3- Intermediate Risk	Stable atrial fibrillation			
3- Intermediate Risk	Diabetes mellitus	HbA1C >7%		
3- Intermediate Risk	Morbid obesity	BMI 30	BMI 40	
3- Intermediate Risk	Anemia	hemoglobin <11 (females), <12 (males)		Workup to identify etiology
3- Intermediate Risk	HIV	CD4 <200 cells/mm3		Get clearance from HIV specialist

3- Intermediate Risk	Rheumatologic disease			Preoperative consultation with rheumatologist re: perioperative medication management
3- Intermediate Risk	Peripheral vascular disease or history of peripheral vascular bypass	ankle-brachial pressure index (ABPI) <0.9		Preoperative consultation with vascular surgeon
3- Intermediate Risk	History of venous thromboembolism (VTE)			
3- Intermediate Risk	Well-controlled obstructive sleep apnea			
3- Intermediate Risk	Malnutrition	transferrin <200 mg/dL albumin <3.5 g/dL prealbumin <22.5 mg/dL total lymphocyte count <1200-1500 cell/mm3 BMI <18		Preoperative consultation with nutritionist
3- Intermediate Risk	Active tobacco Use			Enroll patient in smoking cessation program
4- High Risk	Diabetes mellitus with complications	HbA1c >8%		
4- High Risk	Age	76	85	
4- High Risk	Oxygen dependent pulmonary disease			
4- High Risk	Sickle cell anemia			
4- High Risk	Obesity	BMI 40		
4- High Risk	Cirrhosis, history of hepatic decompensation or variceal bleeding			

4- High Risk	Impaired cognition; dementia			
4- High Risk	Compensated CHF			
4- High Risk	Cerebrovascular disease			
4- High Risk	Uncontrolled or suspected obstructive sleep apnea (OSA)			
4- High Risk	Renal insufficiency	serum creatinine >1.5 mg/dL or creatinine clearance <100 mL/min		
4- High Risk	Opioid dependence			
4- High Risk	End Stage Liver Disease			
4- High Risk	Uncontrolled Seizure Disorder			
4- High Risk	History of Malignant Hyperthermia			
5- Very High Risk	Cardiovascular: unstable angina, recent myocardial infarction (60 days), uncontrolled atrial fibrillation or other high-grade abnormal rhythm, severe valvular disease, decompensated heart failure			
5- Very High Risk	Primary pulmonary hypertension			Preoperative consultation with pulmonologist warranted
5- Very High Risk	Cirrhosis or severe liver disease, history of hepatic decompensation or variceal bleeding			
5- Very High Risk	Severe frailty, dependence for ADLs, or history of 3 or more falls in last 6 mos			
5- Very High Risk	Obesity		BMI >50	
5- Very High Risk	Age		>85	

5- Very High Risk	History of VTE with CI to anticoagulation, failure of anticoagulation, cessation of anticoagulation therapy secondary to bleeding			Preoperative consultation with hematologist or internist
5- Very High Risk	Renal failure requiring dialysis			
5- Very High Risk	Immunosuppression			
5- Very High Risk	Chronic Pain			

Postoperative Care

Service: Physical Therapy

General Guidelines

- **Units, Frequency, & Duration:**
  - There is insufficient evidence available to support recommendations regarding treatment units and frequency.
  - Physical therapy can start around 4 weeks postoperatively.
  - Protocols in the literature include duration at least 3 months[2,13]
- **Criteria for Subsequent Requests:**
- **Recommended Clinical Approach:**[2,3,13]
  - Rehabilitation begins within 4-6 weeks postoperatively with passive-assisted physical therapy and ROM.
  - Progress to active-assisted ROM around 6 weeks postoperatively.
  - The final stage is resistance exercise.
  - Full return to sport/activity at 4-6 months
  - Base the rehabilitation protocol on patient and surgical repair characteristics
- **Exclusions:** None.

Medical Necessity Criteria

Indications

➔ **Post-acute physical therapy** is considered appropriate IF **ALL** of the following is **TRUE**[13]:

◆ The patient underwent a pectoralis major repair.

Non-Indications

None.

Site of Service Criteria

Outpatient

Procedure Codes (HCPCS/CPT)

HCPCS Code	Code Description/Definition
97010	Application of hot or cold packs
97012	Application of mechanical traction

97014	Application of electrical stimulation
97016	Application of vasopneumatic devices
97018	Application of paraffin bath
97022	Application of whirlpool
97024	Application of diathermy
97026	Application of infrared modality
97028	Application of ultraviolet modality
97032	Application of manual electrical stimulation
97033	Application of iontophoresis
97034	Application of contrast baths
97035	Application of ultrasound modality
97036	Application of Hubbard tank
97039	Modality service
97110*	Therapeutic exercises to develop strength and endurance, range of motion and flexibility
97112	Neuromuscular reeducation of movement, balance, coordination, kinesthetic sense, posture, and proprioception for sitting and standing activities
97113	Aquatic therapy with therapeutic exercises
97116	Gait training including stair climbing
97124	Massage including effleurage and petrissage; Massage including effleurage and tapotement; Massage including effleurage, petrissage and tapotement; Massage including petrissage and tapotement
97139	Therapeutic procedure
97140	Manual therapy techniques
97150	Group therapeutic procedures
97164	Physical therapy re-evaluation of established plan of care,

	high complexity, typical time with patient 20 minutes; Physical therapy re-evaluation of established plan of care, high complexity, typical time with patient and family 20 minutes; Physical therapy re-evaluation of established plan of care, high complexity, typical time with patient's family 20 minutes
97530	Direct therapeutic activities with use of dynamic activities to improve functional performance, each 15 minutes
97535	Home management training, direct one-on-one contact, each 15 minutes; Self-care management training, direct one-on-one contact, each 15 minutes
97537	Community reintegration training, direct one-on-one contact, each 15 minutes; Work reintegration training, direct one-on-one contact, each 15 minutes
97542	Wheelchair management, each 15 minutes
97545	Work conditioning, initial 2 hours; Work hardening, initial 2 hours
97546	Work conditioning, each additional hour; Work hardening, each additional hour
97750	Physical performance measurement with written report, each 15 minutes; Physical performance test with written report, each 15 minutes
97755	Assistive technology assessment with written report, direct one-on-one contact, each 15 minutes

97760	Initial orthotic management and training with assessment and fitting of lower extremities and trunk, each 15 minutes; Initial orthotic management and training with assessment and fitting of lower extremities, each 15 minutes; Initial orthotic management and training with assessment and fitting of lower extremity and trunk, each 15 minutes; Initial orthotic management and training with assessment and fitting of lower extremity, each 15 minutes; Initial orthotic management and training with assessment and fitting of trunk, each 15 minutes; Initial orthotic management and training with assessment and fitting of upper and lower extremities and trunk, each 15 minutes
97761	Initial prosthetic training of lower extremities, each 15 minutes; Initial prosthetic training of lower extremity, each 15 minutes Initial prosthetic training of upper and lower extremities, each 15 minutes; Initial prosthetic training of upper extremities, each 15 minutes; Initial prosthetic training of upper extremity, each 15 minutes
97763	Subsequent orthotic management and training of lower extremities and trunk, each 15 minutes Subsequent orthotic management and training of lower extremity and trunk, each 15 minutes Subsequent orthotic management and training of lower extremity, each 15 minutes Subsequent orthotic management and training of upper and lower extremities and trunk, each 15 minutes Subsequent orthotic management and training of upper extremities and trunk, each 15 minutes Subsequent orthotic management and training of upper extremities, each 15 minutes Subsequent orthotic management and training of upper extremity and trunk, each 15 minutes Subsequent orthotic management and training of upper extremity, each 15 minutes Subsequent orthotic management of lower extremities and

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97799	Unlisted physical medicine/rehabilitation service or procedure
420	Physical Therapy
421	Physical Therapy: Visit Charge
422	Physical Therapy: Hourly Charge
423	Physical Therapy: Group Rate
424	Physical Therapy: Evaluation/Re-evaluation
429	Physical Therapy: Other Physical Therapy
97163	Evaluation of physical therapy, typically 45 minutes
97161	Evaluation of physical therapy, typically 20 minutes
97162	Evaluation of physical therapy, typically 30 minutes
97168	Re-evaluation of occupational therapy established plan of care, typically 30 minutes
97165	Evaluation of occupational therapy, typically 30 minutes
97166	Evaluation of occupational therapy, typically 45 minutes
97167	Evaluation of occupational therapy established plan of care, typically 60 minutes
G0151	Hhcp-serv of pt,ea 15 min

*Default codes for suggested services

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Clinical Guideline Revision History/Information

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November 5, 2021 (V.2)	Reviewing Physician: Dr. Edwin Spencer Approving Physician: Dr. Brian Covino
December 29, 2022 (V.3)	Reviewing Physician: Dr. Edwin Spencer Approving Physician: Dr. Traci Granston