

Tendon rupture

Tendon ruptures can usually be diagnosed by clinical assessment. X-rays and ultrasound are used to establish or confirm the diagnosis but MRI gives the most definitive information about the nature and extent of the rupture.

Tendon disorders are common and lead to significant disability, pain, healthcare cost, and lost productivity^[1]. Tendon ruptures may cause severe initial pain and lead to permanent disability if untreated. Management may be surgical or non-surgical depending on the site and severity of the rupture and the clinical features and disability caused by the rupture.

Patients aged over 60 years are more prone to tendon damage and therefore tendon rupture. Younger people can also be at increased risk associated with sporting activities.

Tendon damage (including rupture) has been reported rarely in patients receiving quinolones (eg, ciprofloxacin, ofloxacin, levofloxacin)^[2]. Tendon rupture may occur within 48 hours of starting treatment but has also been reported several months after stopping a quinolone. The risk of tendon damage is increased by the concomitant use of corticosteroids. Quinolones are therefore contra-indicated in patients with a history of tendon disorders related to quinolone use. If tendonitis is suspected, the quinolone should be discontinued immediately.

The most common tendon ruptures are discussed below. [Achilles Tendinopathy and Rupture](#) are discussed in greater detail in a separate article. Shoulder rotator cuff tears are discussed in the separate article [Shoulder Pain](#).

Proximal biceps tendon rupture

Ruptures of the proximal biceps tendon make up nearly all biceps ruptures. Proximal biceps tendon rupture is usually transverse and either within the shoulder joint or within the proximal part of the intertubercular groove. The prognosis for biceps tendon ruptures is good for both surgical repair and for conservative management.

See also the [Bicipital Tendinopathy](#) article.

Presentation

The biceps muscle bunches up in the distal arm, causing the characteristic 'Popeye muscle' appearance. There is minimal loss of function.

Treatment

- Patients are often treated conservatively^[3]. Most will become asymptomatic after 4–6 weeks. Patients may benefit from non-steroidal anti-inflammatory drugs and physiotherapy.
- There are no generally agreed guidelines for the role of surgical repair but tenodesis and proximal subacromial decompression (or distal reattachment) may be required for young or athletic patients, or for persons who require maximum supination strength.

Distal biceps tendon rupture

- Distal biceps tendon rupture is usually caused by a single traumatic event involving flexion against resistance, with the elbow at a right angle.
- Incidence of distal biceps rupture is 1.2 per 100,000 per year^[4].
- It most often occurs in middle-aged active males^[5].

Presentation

- A sudden sharp tearing sensation results in a painful swollen elbow with weakness of flexion and supination.

- In a partial rupture, the biceps tendon will still be palpable in the antecubital fossa.

Treatment^[4]

- Conservative treatment results in persistent elbow weakness, especially supination, and patients may experience prolonged pain.
- Surgery must be performed early in order to avoid scarring of the biceps. With delayed treatment, the biceps may be attached to the brachialis^[6].

Complications

Rupture may lead to [biceps tendonitis](#) and median nerve compression.

Patellar tendon rupture

- Patellar tendon rupture is usually unilateral and due to a sports injury in patients younger than 40 years.
- Bilateral ruptures, with more minor trauma, can occur in patients with systemic conditions such as inflammatory disease, diabetes mellitus or chronic kidney disease.

Presentation

- There is an immediate onset of pain with a tearing sensation.
- Diffuse tender swelling with bruising develops in the anterior knee.
- A defect at the level of the rupture may be palpable.
- Active extension may be completely lost and the patient unable to maintain the passively extended knee against gravity.

Treatment

- Conservative management has a very limited role but may be indicated for the rare case of partial patellar tendon tear (cast or brace immobilisation in full extension for six weeks, followed by physiotherapy).

- Immediate surgical repair of the ruptured patellar tendon is recommended for optimal return of function. The outcome is closely related to the length of time between injury and repair^[7]. If the tendon is repaired immediately, most patients experience nearly full return of knee motion.

Quadriceps tendon rupture

- Quadriceps tendon rupture is relatively infrequent and usually occurs in patients older than 40 years.
- Spontaneous rupture may occur. The most common mechanism is a simple fall^[8].

Presentation

- Patients typically present with acute knee pain, swelling and functional loss following a stumble, fall or giving way of the knee.
- There may be no history of prior knee pain. Suprapatellar swelling, bruising and tenderness are present.
- There is also variable loss of knee extension.

Treatment

- Early surgical repair yields the best results for complete quadriceps tendon ruptures.
- Partial tears can be treated conservatively with rest, analgesia and physiotherapy.

Posterior tibial tendon rupture

- The posterior tibial tendon maintains the arch of the foot and posterior tibial tendon rupture is one of the most common causes of acquired flat foot in adults.
- The foot may become so deformed that severe ankle arthritis develops.

Presentation

- Pain frequently begins just behind the medial malleolus.

- The foot rolls inwards and becomes flat.

Treatment^[9]

- Arch supports and heel cups are usually ineffective in relieving symptoms. The objective is to reduce excessive midfoot motion, using total contact orthosis supporting the longitudinal arch, and a medial heel wedge.
- Surgery (tenosynovectomy, lateral column lengthening or arthrodesis) is indicated for greater degrees of foot deformity.

Peroneal tendon rupture

- Most peroneal tendon ruptures are longitudinal tears of the peroneus brevis tendon and this usually occurs as the result of a lateral ankle sprain.
- Peroneal tears have been linked to ballet dancing, skiing, soccer, tennis, running, basketball and ice skating^[10] .
- The longer the injury takes to heal, the greater the suspicion of a tendon rupture.
- Many cases of peroneal tears are too small to find with any test other than exploratory surgery.

Treatment

- Conservative treatment with immobilisation followed by mobilisation and physiotherapy may be tried but there is a relatively high recurrence rate^[11] .
- Acute peroneus longus tears more commonly occur at the level of the cuboid tunnel and may initially be managed non-operatively but may require debridement and tenodesis^[12] .
- Complete ruptures of both peronei are rare and require reconstructive surgery if there is a significant defect^[12] .

Hand flexor tendon rupture

- Most often, the flexor tendons are damaged by a cut, which may also damage adjacent nerves.

- Closed flexor tendon ruptures due to trauma without an external wound are rare^[13] .
- Sports injuries are also common causes of hand flexor tendon ruptures, usually in football, wrestling or rugby.
- People with rheumatoid arthritis may experience a spontaneous rupture of the hand tendons.

Presentation

- There is tenderness over the flexor aspect of the finger.
- The patient is unable to flex one or more joints of the finger and attempting to do so causes pain.

Treatment

Flexor tendon injuries require surgical repair and this should be performed as soon as possible after the injury.

Hand extensor tendon rupture

Extensor tendons are easily injured, even by a minor cut. Jamming a finger may cause the tendon to tear from the attachment to bone.

Presentation

- Hand extensor tendon rupture can cause a mallet finger (fixed flexion of the distal interphalangeal joint) or boutonnière deformity (fixed flexion at the middle interphalangeal joint).
- Lacerations on the back of the hand that go through the extensor tendons can cause inability to extend the finger at the metacarpophalangeal joint.

Treatment^[14]

- Partial extensor tendon injuries are treated conservatively, with a splint.
- Complete rupture is treated by operative repair.

- Surgery to free scar tissue may be needed if there is significant loss of finger movement.

Further reading

- [Muscles and Tendons](#); Wheelless' Textbook of Orthopaedics
- [Kane SF, Olewinski LH, Tamminga KS](#); Management of Chronic Tendon Injuries. *Am Fam Physician*. 2019 Aug 1;100(3):147-157.

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