

## TENDON RUPTURE; NON-TRAUMATIC (SPONTANEOUS)

*Includes Rotator Cuff Tear and Rupture*

### Background

This case definition was developed by the Armed Forces Health Surveillance Branch (AFHSB) for the purpose of epidemiological surveillance of a condition important to military-associated populations. Studies have shown that non-traumatic tendon ruptures have a disproportionately large impact on military operational effectiveness and the military health system.<sup>1,2</sup>

### Clinical Description

Tendon ruptures are tears in the fibrous tissue that attaches muscle to bone. Non-traumatic tendon ruptures are defined as ruptures that occur without significant trauma or force; commonly associated with strenuous activities. For example, running, sudden stops and starts, and jumping are often associated with Achilles tendon tears. Other risk factors include increasing age, male gender, use of certain medications (e.g. fluoroquinolone antibiotics, anabolic steroids), and degenerative changes in tendon tissue. In addition, there may be a genetic predisposition. Tendon ruptures can be chronically painful and disabling depending on the nature and location of the affected tendon. Most ruptured tendons can be repaired surgically or with immobilization; however, regardless of the therapeutic approach, there are often long periods of rehabilitation.<sup>3</sup>

### Case Definition and Incidence Rules

For surveillance purposes, a case of tendon rupture is defined as:

- *One hospitalization or outpatient medical encounter* with any of the defining diagnoses of tendon rupture (see ICD9 and ICD10 code lists below) in the *primary* diagnostic position.

#### *Incidence rules:*

For individuals who meet the case definition:

- The incidence date is considered the date of the first hospitalization or outpatient medical encounter that includes a defining diagnosis of tendon rupture.
- For analyses of all tendon ruptures in *any* location, an individual is considered an incident case once during the surveillance period. For analyses of ruptures of a specific tendon, an individual is considered an incident case once per specific tendon per surveillance period.

*(continued on next page)*

<sup>1</sup> Jarvinen TAH, Kannus P, Maffulli N, Khan KH. Achilles tendon disorders: etiology and epidemiology. *Foot Ankle Clin N Amer.* 2005; 10:255-266.

<sup>2</sup> White DW, Wenke JC, Mosely DS, Mountcastle SB, Basamania CJ. Incidence of major tendon ruptures and anterior cruciate ligament tears in US Army soldiers. *Am J Sports Med.* 2007 Aug; 35(8):1308-14.

<sup>3</sup> Armed Forces Health Surveillance Center. Tendon Rupture, U.S. Armed Forces, 2000-2009. *Medical Surveillance Monthly Report (MSMR).* 2010 July; Vol 17(7): pp. 14-19.



### Case Definition and Incidence Rules *(continued)*

#### Exclusions:

- None

### Codes

The following ICD9 and ICD10 codes are included in the case definition:

Condition	ICD-10-CM Codes	ICD-9-CM Codes
Spontaneous rupture extensor tendons	<i>M66.2 (spontaneous rupture of extensor tendons)</i>	<i>727.6 (rupture of tendon, nontraumatic)</i>
	- M66.20 (spontaneous rupture of extensor tendons, unspecified site)	727.60 (nontraumatic rupture of unspecified tendon)
	<i>M66.21 (spontaneous rupture of extensor tendons, shoulder)</i>	727.62 (nontraumatic rupture of tendons of biceps; long head)
	- M66.211 (spontaneous rupture of extensor tendons, right shoulder)	
	- M66.212 (spontaneous rupture of extensor tendons, left shoulder)	
	- M66.219 (spontaneous rupture of extensor tendons, unspecified shoulder)	
	<i>M66.22 (spontaneous rupture of extensor tendons, upper arm)</i>	
	- M66.221 (spontaneous rupture of extensor tendons, right upper arm)	
	- M66.222 (spontaneous rupture of extensor tendons, left upper arm)	
	- M66.229 (spontaneous rupture of extensor tendons, unspecified upper arm)	
	<i>M66.23 (spontaneous rupture of extensor tendons, forearm)</i>	727.63 (nontraumatic rupture of extensor tendons of hand and wrist)
	- M66.231 (spontaneous rupture of extensor tendons, right forearm)	
	- M66.232 (spontaneous rupture of extensor tendons, left forearm)	
	- M66.239 (spontaneous rupture of extensor tendons, unspecified forearm)	
	<i>M66.24 (spontaneous rupture of extensor tendons, hand)</i>	



	- M66.241 (spontaneous rupture of extensor tendons, <i>right</i> hand)	
	- M66.242 (spontaneous rupture of extensor tendons, <i>left</i> hand)	
	- M66.249 (spontaneous rupture of extensor tendons, <i>unspecified</i> hand)	
	<i>M66.25 (spontaneous rupture of extensor tendons, thigh)</i>	727.65 (nontraumatic rupture of quadriceps tendon)
	- M66.251 (spontaneous rupture of extensor tendons, <i>right</i> thigh)	
	- M66.252 (spontaneous rupture of extensor tendons, <i>left</i> thigh)	
	- M66.259 (spontaneous rupture of extensor tendons, <i>unspecified</i> thigh)	
	<i>M66.26 (spontaneous rupture of extensor tendons, lower leg)</i>	727.66 (nontraumatic rupture of patellar tendon)
	- M66.261 (spontaneous rupture of extensor tendons, <i>right</i> lower leg)	
	- M66.262 (spontaneous rupture of extensor tendons, <i>left</i> lower leg)	
	- M66.269 (spontaneous rupture of extensor tendons, <i>unspecified</i> lower leg)	
	<i>M66.27 (spontaneous rupture of extensor tendons, ankle and foot)</i>	727.68 (nontraumatic rupture of other tendons of foot and ankle)
	- M66.271 (spontaneous rupture of extensor tendons, <i>right</i> ankle and foot)	
	- M66.272 (spontaneous rupture of extensor tendons, <i>left</i> ankle and foot)	
	- M66.279 (spontaneous rupture of extensor tendons, <i>unspecified</i> ankle and foot)	
	<i>M66.28 (spontaneous rupture of extensor tendons, other site)</i>	727.69 (nontraumatic rupture of other tendon)
	<i>M66.29 (spontaneous rupture of extensor tendons, multiple sites)</i>	
Spontaneous rupture flexor tendons	<i>M66.3 (spontaneous rupture of flexor tendons)</i>	727.62 (above)
	- M66.30 (spontaneous rupture of flexor tendons, unspecified site)	
	<i>M66.31 (spontaneous rupture of flexor tendons, shoulder)</i>	

(continued on next page)



- M66.311 (spontaneous rupture of flexor tendons, <i>right</i> shoulder)	
- M66.312 (spontaneous rupture of flexor tendons, <i>left</i> shoulder)	
- M66.319 (spontaneous rupture of flexor tendons, <i>unspecified</i> shoulder)	
<i>M66.32 (spontaneous rupture of flexor tendons, upper arm)</i>	
- M66.321 (spontaneous rupture of flexor tendons, <i>right</i> upper arm)	
- M66.322 (spontaneous rupture of flexor tendons, <i>left</i> upper arm)	
- M66.329 (spontaneous rupture of flexor tendons, <i>unspecified</i> upper arm)	
<i>M66.33 (spontaneous rupture of flexor tendons, forearm)</i>	727.64 (nontraumatic rupture of flexor tendons of hand and wrist)
- M66.331 (spontaneous rupture of flexor tendons, <i>right</i> forearm)	
- M66.332 (spontaneous rupture of flexor tendons, <i>left</i> forearm)	
- M66.339 (spontaneous rupture of flexor tendons, <i>unspecified</i> forearm)	
<i>M66.34 (spontaneous rupture of flexor tendons, hand)</i>	
- M66.341 (spontaneous rupture of flexor tendons, <i>right</i> hand)	
- M66.342 (spontaneous rupture of flexor tendons, <i>left</i> hand)	
- M66.349 (spontaneous rupture of flexor tendons, <i>unspecified</i> hand)	
<i>M66.35 (spontaneous rupture of flexor tendons, thigh)</i>	727.69 (above)
- M66.351 (spontaneous rupture of flexor tendons, <i>right</i> thigh)	
- M66.352 (spontaneous rupture of flexor tendons, <i>left</i> thigh)	
- M66.359 (spontaneous rupture of flexor tendons, <i>unspecified</i> thigh)	
<i>M66.36 (spontaneous rupture of flexor tendons, lower leg)</i>	727.67 (nontraumatic rupture of achilles tendon)
- M66.361 (spontaneous rupture of flexor tendons, <i>right</i> lower leg)	

(continued on next page)



	- M66.362 (spontaneous rupture of flexor tendons, <i>left</i> lower leg)	
	- M66.369 (spontaneous rupture of flexor tendons, <i>unspecified</i> lower leg)	
	<i>M66.37 (spontaneous rupture of flexor tendons, ankle and foot)</i>	727.68 (above)
	- M66.371 (spontaneous rupture of flexor tendons, <i>right</i> ankle and foot)	
	- M66.372 (spontaneous rupture of flexor tendons, <i>left</i> ankle and foot)	
	- M66.379 (spontaneous rupture of flexor tendons, <i>unspecified</i> ankle and foot)	
	<i>M66.38 (spontaneous rupture of flexor tendons, other site)</i>	727.69 (above)
	<i>M66.39 (spontaneous rupture of flexor tendons, multiple sites)</i>	
Spontaneous rupture <i>other</i> tendons	<i>M66.8 (spontaneous rupture of other tendons)</i>	727.69 (above)
	- M66.80 (spontaneous rupture of other tendons, unspecified site)	
	<i>M66.81 (spontaneous rupture of other tendons, shoulder)</i>	
	- M66.811 (spontaneous rupture of other tendons, <i>right</i> shoulder)	
	- M66.812 (spontaneous rupture of other tendons, <i>left</i> shoulder)	
	- M66.819 (spontaneous rupture of other tendons, <i>unspecified</i> shoulder)	
	<i>M66.82 (spontaneous rupture of other tendons, upper arm)</i>	727.62 (above)
	- M66.821 (spontaneous rupture of other tendons, <i>right</i> upper arm)	
	- M66.822 (spontaneous rupture of other tendons, <i>left</i> upper arm)	
	- M66.829 (spontaneous rupture of other tendons, <i>unspecified</i> upper arm)	
	<i>M66.83 (spontaneous rupture of other tendons, forearm)</i>	
	- M66.831 (spontaneous rupture of other tendons, <i>right</i> forearm)	
	- M66.832 (spontaneous rupture of other tendons, <i>left</i> forearm)	

(continued on next page)



- M66.839 (spontaneous rupture of other tendons, <i>unspecified</i> forearm)	
<i>M66.84 (spontaneous rupture of other tendons, hand)</i>	727.64 (above)
- M66.841 (spontaneous rupture of other tendons, <i>right</i> hand)	
- M66.842 (spontaneous rupture of other tendons, <i>left</i> hand)	
- M66.849 (spontaneous rupture of other tendons, <i>unspecified</i> hand)	
<i>M66.85 (spontaneous rupture of other tendons, thigh)</i>	727.69 (above)
- M66.851 (spontaneous rupture of other tendons, <i>right</i> thigh)	
- M66.852 (spontaneous rupture of other tendons, <i>left</i> thigh)	
- M66.859 (spontaneous rupture of other tendons, <i>unspecified</i> thigh)	
<i>M66.86 (spontaneous rupture of other tendons, lower leg)</i>	727.67 (above)
- M66.861 (spontaneous rupture of other tendons, <i>right</i> lower leg)	
- M66.862 (spontaneous rupture of other tendons, <i>left</i> lower leg)	
- M66.869 (spontaneous rupture of other tendons, <i>unspecified</i> lower leg)	
<i>M66.87 (spontaneous rupture of flexor tendons, ankle and foot)</i>	727.68 (above)
- M66.871 (spontaneous rupture of flexor tendons, <i>right</i> ankle and foot)	
- M66.872 (spontaneous rupture of flexor tendons, <i>left</i> ankle and foot)	
- M66.879 (spontaneous rupture of flexor tendons, <i>unspecified</i> ankle and foot)	
<i>M66.88 (spontaneous rupture of other tendons, other)</i>	727.69 (above)
<i>M66.89 (spontaneous rupture of other tendons, multiple sites)</i>	
<i>M66.9 (spontaneous rupture of unspecified tendon)</i>	727.60 (above)
	(continued on next page)

Rotator cuff tear or rupture	<i>M75.1 (rotator cuff tear or rupture, not specified as traumatic)</i>	726.13 (partial tear of rotator cuff)
	<i>M75.10 (unspecified rotator cuff tear or rupture, not specified as traumatic)</i>	
	- M75.100 (unspecified rotator cuff tear or rupture of <i>unspecified</i> shoulder, not specified as traumatic)	
	- M75.101 (unspecified rotator cuff tear or rupture of <i>right</i> shoulder not specified as traumatic)	
	- M75.102 (unspecified rotator cuff tear or rupture of <i>left</i> shoulder not specified as traumatic)	
	<i>M75.11 (incomplete rotator cuff tear or rupture, not specified as traumatic)</i>	
	- M75.110 (incomplete rotator cuff tear or rupture of <i>unspecified</i> shoulder, not specified as traumatic)	
	- M75.111 (incomplete rotator cuff tear or rupture of <i>right</i> shoulder, not specified as traumatic)	
	- M75.112 (incomplete rotator cuff tear or rupture of <i>left</i> shoulder, not specified as traumatic)	
	<i>M75.12 (complete rotator cuff tear or rupture, not specified as traumatic)</i>	727.61 (complete rupture of rotator cuff)
	- M75.120 (incomplete rotator cuff tear or rupture of <i>unspecified</i> shoulder, not specified as traumatic)	
	- M75.121 (complete rotator cuff tear or rupture of <i>right</i> shoulder not specified as traumatic)	
	- M75.122 (complete rotator cuff tear or rupture of <i>left</i> shoulder not specified as traumatic)	

### Development and Revisions

- In November of 2016 the case definition was updated to include ICD10 codes.
- The case definition was developed in July of 2010 by the AFHSC *Medical Surveillance Monthly Report (MSMR)* staff for use in a *MSMR* article on nontraumatic tendon ruptures.<sup>1</sup> The case definition is based on reviews of ICD9 codes, the scientific literature, and previous AFHSC analyses.



### *Case Definition and Incidence Rule Rationale*

- Hospitalizations are restricted to tendon ruptures reported in the primary diagnostic position in hospitalization and outpatient records in an effort to increase the specificity of cases identified.

### *Code Set Determination and Rationale*

- When referring to tendon ruptures in ICD10, the ICD9 term “non-traumatic” has been replaced with the term “spontaneous.” Per ICD-10-CM, a spontaneous tendon rupture is a “rupture that occurs when a normal force is applied to tissues that are inferred to have less than normal strength.” A tendon rupture that occurs as a result of an “abnormal force applied to normal tissue” is classified in ICD10 as a traumatic tendon injury. ICD10 codes for traumatic tendon injuries are located in ICD10 sections S00-S99. For example, under S46.01 (strain of muscle(s) and tendon(s) of the rotator cuff of shoulder) is “traumatic rotator cuff tear.” Providers are responsible for determining the spontaneous or traumatic etiology of an acute tendon injury.
- This code set includes ICD9 and ICD10 codes for incomplete (partial) tendon ruptures of the rotator cuff. Partial or incomplete tears were not included in the code set used for the 2010 MSMR article on tendon ruptures.<sup>3</sup>

### **Reports**

---

AFHSB reports on tendon ruptures in the following reports:

- None

### **Review**

---

Nov 2016	Case definition reviewed and updated by the AFHSB Surveillance Methods and Standards (SMS) working group.
Mar 2012	Case definition reviewed and adopted by the AFHSC Surveillance Methods and Standards (SMS) working group.
Jul 2010	Case definition developed and adopted by the AFHSC MSMR staff.

### **Comments**

---

None

