Achilles Tendon Rupture

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Achilles tendon:

• Largest tendon in body.

• Formed from conjoined tendons of gastrocnemius and soleus muscles.

• Inserts on calcaneus.

• Contributes to plantar flexion of foot.
Types of Achilles Tendon Injury

- **Peritendinosis (peritendinitis)**
  - Edema and scarring of paratenon (fatty areolar tissue around tendon).
  - Acute pain and swelling.
  - Seen in runners who increase their training or run on uneven surfaces.

- **Tendinosis**
  - Intrasubstance degeneration of tendon itself.

- **Tears (partial or complete)**
  - Vulnerable zone of avascularity 2-6 cm above calcaneal insertion.
Who gets tears?

• Average age 35-40.
• Sports act is often triggering factor.
  • “Weekend Warrior”
• In elderly underlying systemic disease or long-term corticosteroid medication may contribute.
• Chronic degeneration of tendon (tendinosis) may be predisposing factor.
Our patient

Mr. S is a 37 year-old man who was playing basketball at the local YMCA on Saturday afternoon. Even though Mr. S was a serious athlete in college, in the years since graduation he only makes it to the gym once a week for a pick-up game with his buddies from the office.

As he was starting to chase after the ball, Mr. S felt a sudden pain in his left calf and heard a snap. He thought he had been shot! He could not walk and immediately limped to the sideline.
Diagnosis

Diagnosis of Achilles Tendon rupture can almost always be made **clinically**.

- Look for:
  - Palpable gap in tendon
  - Positive Thompson test
  - Difficulty standing on toes
  - Tenderness
Imaging Options

- **Plain films** are not very helpful.
- In questionable cases **ultrasound** can provide definitive diagnosis (particularly good in differentiating partial from complete rupture).
- **MRI** helpful in planning surgery and in identifying intratendon abnormalities such as tears, tendinosis, and retrocalcaneal bursitis.
  - Helps surgeon decide whether to approximate tendon ends or use allograft.
Plain film of torn Achilles
Longitudinal sonogram showing partial-thickness tear

Tendon is markedly **thickened** and **hypoechoic**.
Longitudinal sonogram showing full-thickness tear

This ultrasound shows *posterior shadowing* (due to sound beam refraction at frayed tendon ends) and 9 mm of *retraction* with tendon debris between calipers. Another sign of tear on ultrasound is *fat herniation.*
# Tendons on MRI

<table>
<thead>
<tr>
<th>Condition</th>
<th>Proton Density</th>
<th>T2</th>
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</thead>
<tbody>
<tr>
<td>Normal</td>
<td>DARK</td>
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<tr>
<td>Degenerated (tendinosis)</td>
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<td>DARK</td>
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<tr>
<td>Torn</td>
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</tbody>
</table>
NORMAL - axial

Proton density

T2

Achilles tendon

PACS, BIDMC

SITY SIMILAR TO T1

HOUT FAT SAT
NORMAL - sagittal

Proton density

T2

Achilles tendon
Tendons on MRI

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DEGENERATED - axial

Proton density

T2

slightly increased signal
DEGENERATED - sagittal

Proton density

T2

thickened tendon
## Tendons on MRI

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TEAR - axial

Proton density

T2

intact plantaris tendon

tear

PACS, BIDMC

AXIAL pd MUCH OF TENDON IS TORN SMALL TEAR

PACS, BIDMC
TEAR - sagittal

Proton density

T2

avulsed piece of bone
Summary - sagittal

Proton Density Images

Normal

Degenerated

Torn
Summary - axial

Normal

Degenerated

Proton Density Images

Torn
Treatment for Achilles tendon rupture

- Surgery followed by early mobilization has had better results than just immobilizing tendon with cast for 8 weeks.
- Active rehabilitation phase after surgery is 6 months long.
- Most patients can return to pre-injury activity including sports.
Conclusion

• Achilles tendon rupture is often seen in middle-aged men who exercise infrequently.
• Diagnosis is usually made without imaging but US can be used in questionable cases.
• MRI is used in surgical planning.
References


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