

Posterior Heel Pain

인제의대 안 재 기

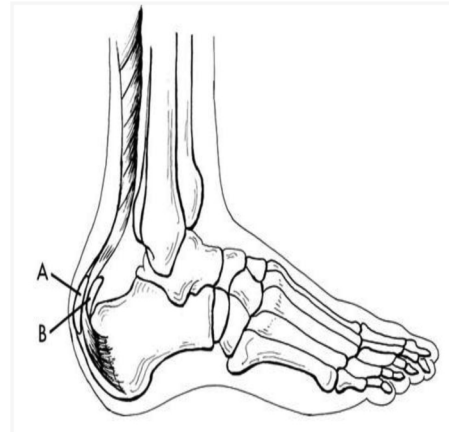
Achilles: History

- Greek warrior in Trojan war
- Mother dipped in river Styx to make immortal
- Invulnerable except heel
- Killed by Paris



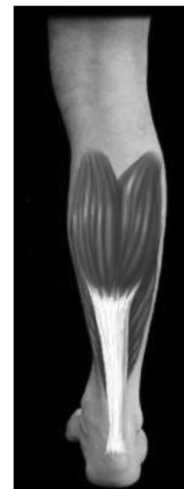
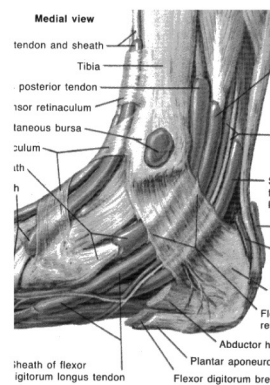
Anatomic Considerations

- Achilles tendon
- Paratenon
- Retro Achilles bursa (a)
- Retro Calcaneal bursa (b)
- Posterior Calcaneal process
- Blood Supply



Achilles Tendon

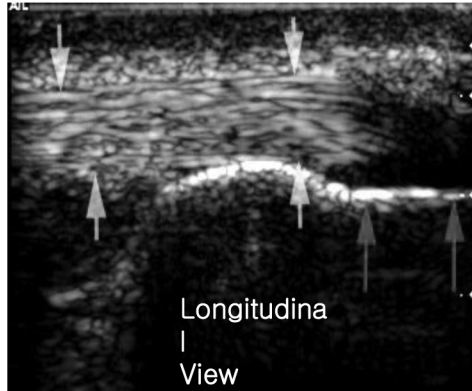
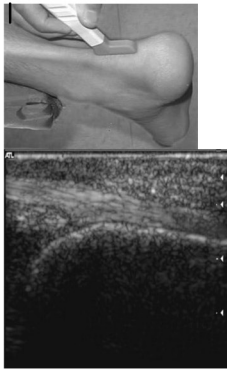
- 1.2 to 2.5 cm in width
- 5mm to 6 mm in thickness
- Larger at the insertion on the inferior half of the posterior calcaneal surface
- Twisting rod
- No synovial sheath



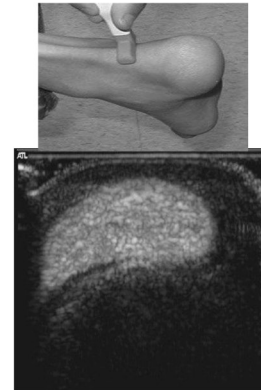
Normal Achilles Tendon

well defined homogenous reflectors
within a clearly margined structure

Longitudina

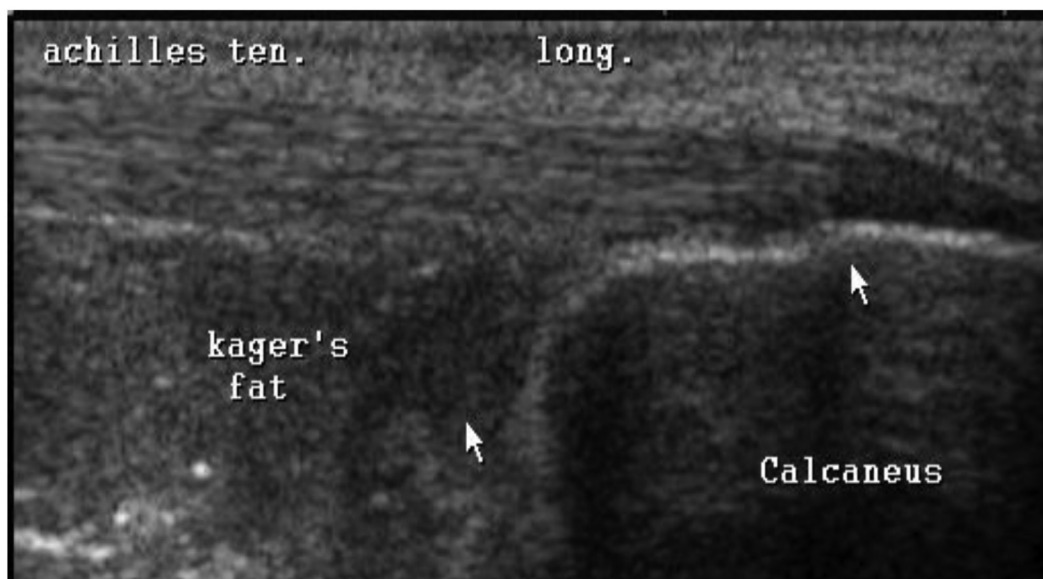


transverse

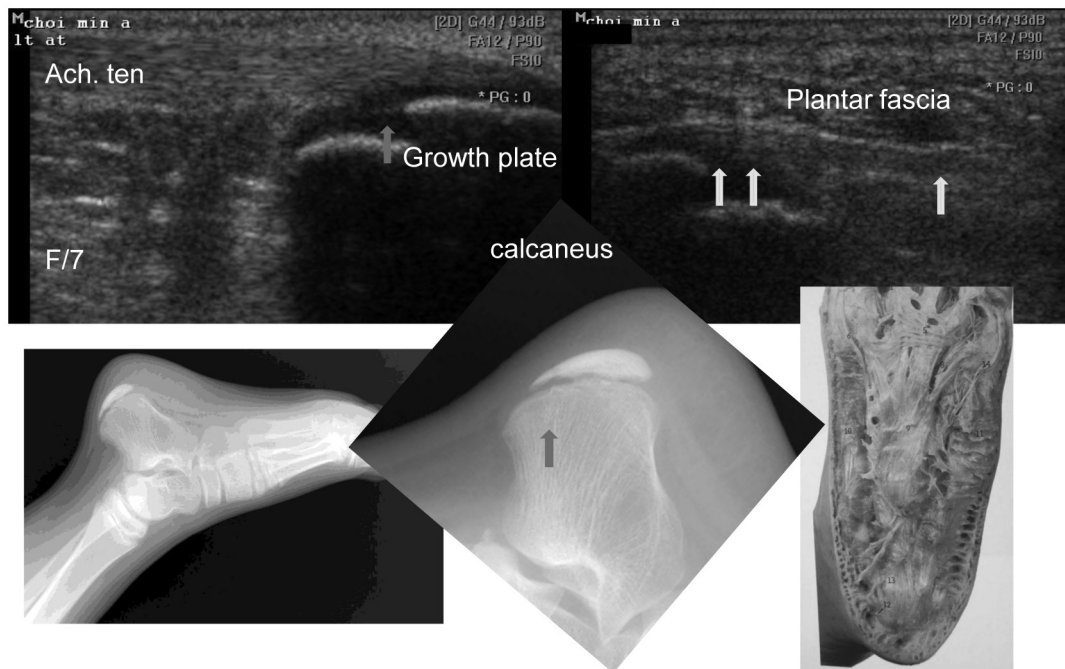


The effect of anisotropy (red arrows) as the tendon curves
at the insertion on the calcaneus

Achilles Tendon



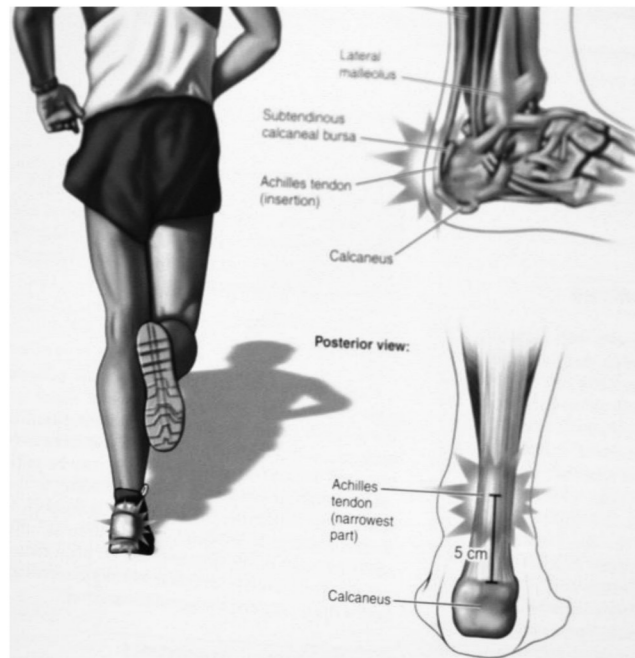
Achilles, PF in US



Retrocalcaneal Bursa



Achilles Tendon injury



Achilles: History

- Greek warrior in Trojan war
- Mother dipped in river Styx to make immortal
- Invulnerable except heel
- Killed by Paris



Pathogenesis

- Intrinsic Factors
 - General
 - Decreased perfusion
 - Systemic diseases
inflammatory SpA
 - Gender/age/weight
 - Local
 - Valgus/Planus
 - Limb length
- Extrinsic Factors
 - General
 - Corticosteroids
 - Fluroquinolone
 - Drugs/narcotics
 - Sports
 - Training errors
 - Excessive loads
 - Environment

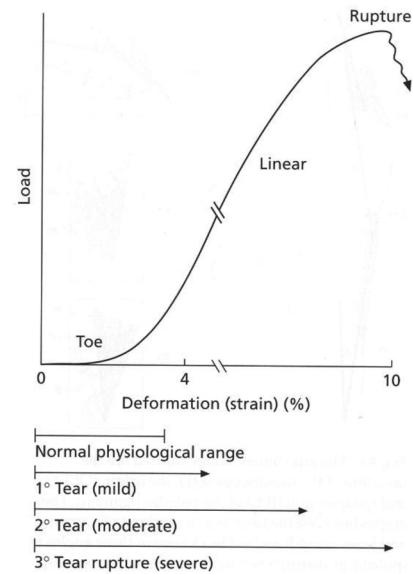
Hamilton WG, root and Ankle injury in dancers 1993

Posterior heel pain

- Non-insertional achilles tendinopathy
- Insertional achilles tendinopathy
; enthesopathy
- Retrocalcaneal bursitis
Haglund disease
- Adventitial bursitis

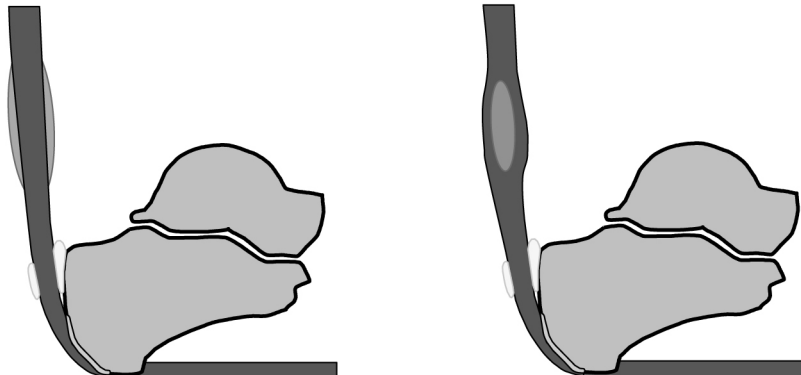
Non-Insertional Tendinopathy

- Etiology
 - Overuse
 - Hypovascularity
 - Tendon twist
 - Heel pronation
 - Small Achilles tendon
 - Diabetes
 - Steroid use



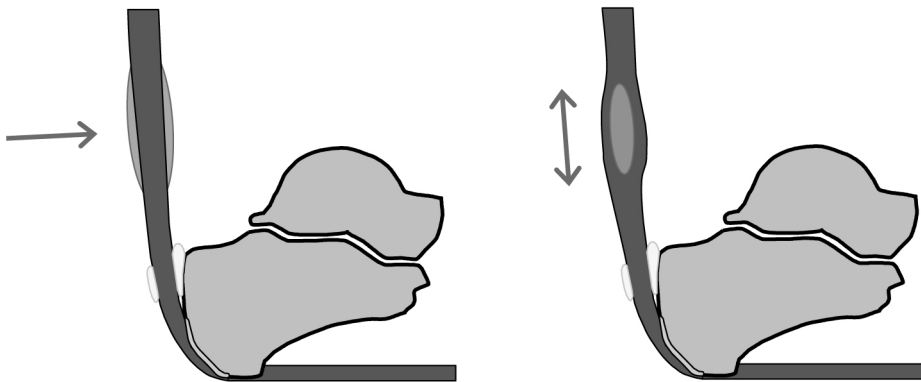
Non-Insertional Tendinopathy

- Paratendinitis
- Paratendinitis with tendinopathy
- Tendinopathy

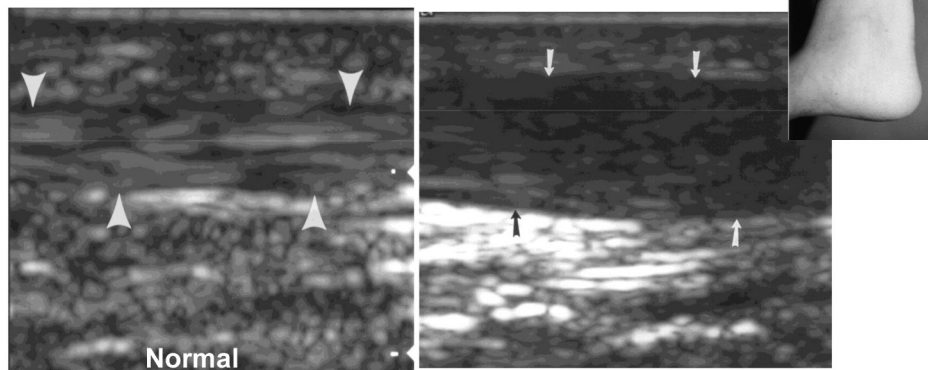


Non-Insertional Tendinopathy

- Paratendinitis
- Paratendinitis with tendinopathy
- Tendinopathy



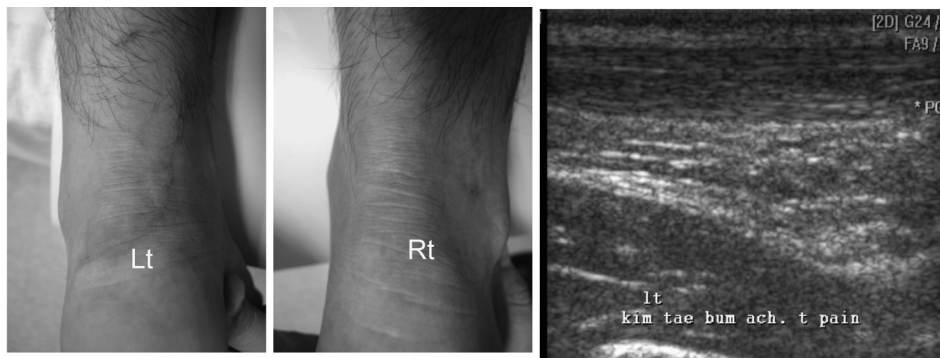
Achilles tendinitis



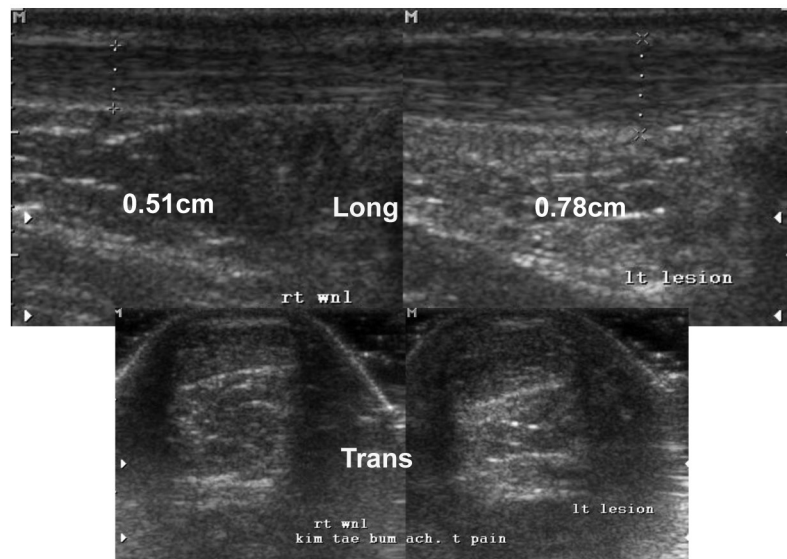
Swelling of tendon hypoechogenicity :
increased glycosaminoglycan
Parallel fibrillar pattern loss

Achilles tendinitis(1)

- Kim T B (M/25)
- 2-3년간 Lt. heel pain
- 군복무시 통증 발생

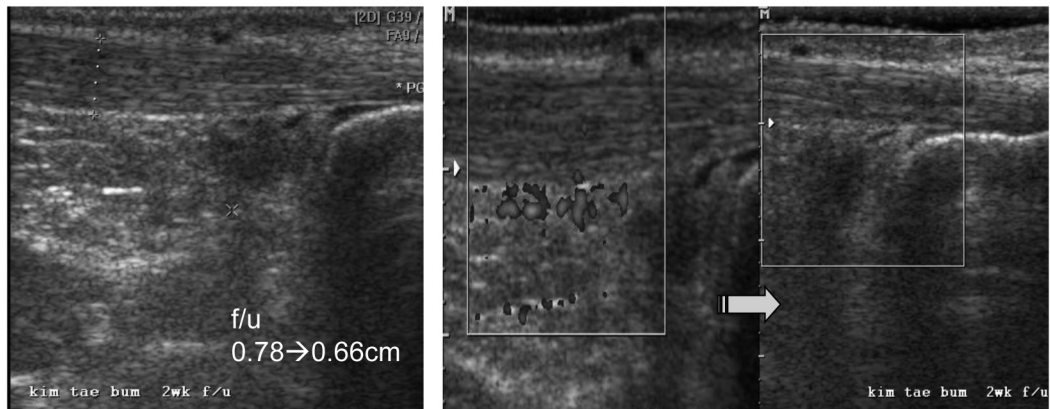


Achilles tendinitis(2)



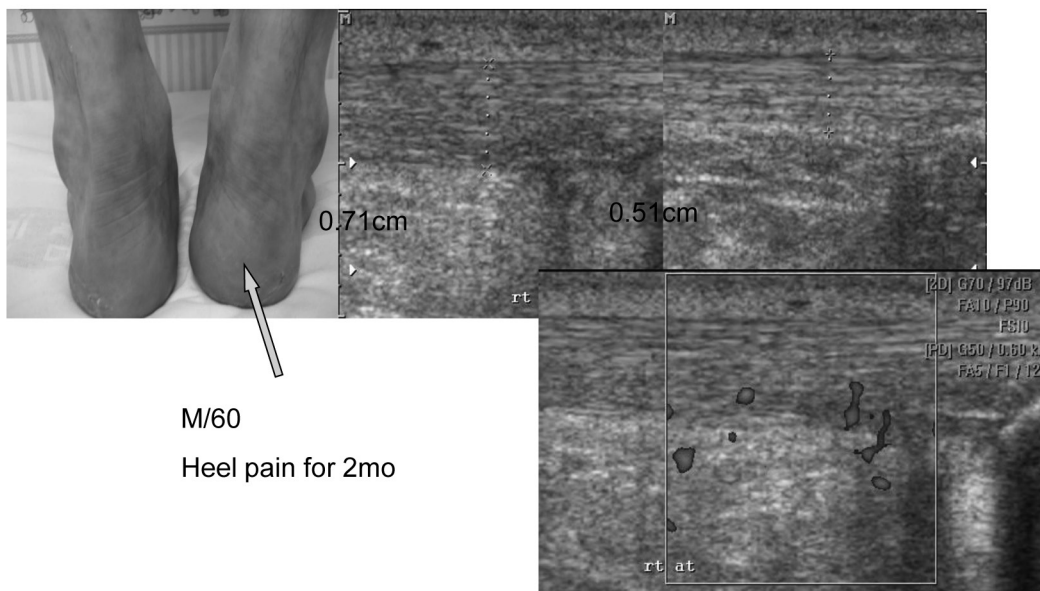
Achilles tendinitis F/U

(Kim TB, 2wk F/U)



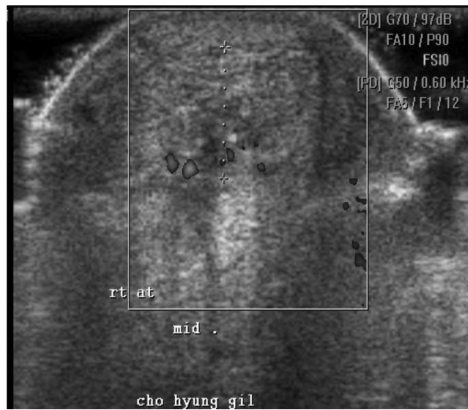
Noninsertional tendinopathy

(partial tear)





Noninsertional tendinopathy (partial tear)



Achilles paratenonitis (peritendonitis)

- Paratenon : blood supply - transverse vessel
- Inflammatory changes in the fat pad surrounding the tendon : little amount of fluid in the peritenon
- Hyperechogenicity of the fat
(Kager's fat: hypoecho → hyperecho)



Non-Insertional Tendinopathy (management)

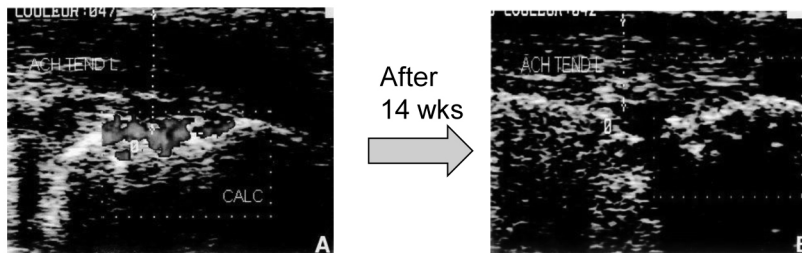
- Ice
- Anti-inflammatories(NSAIDs...)
- Modified activity
- Heel lift
- Stretching programme
- ? Immobilization

Surgery

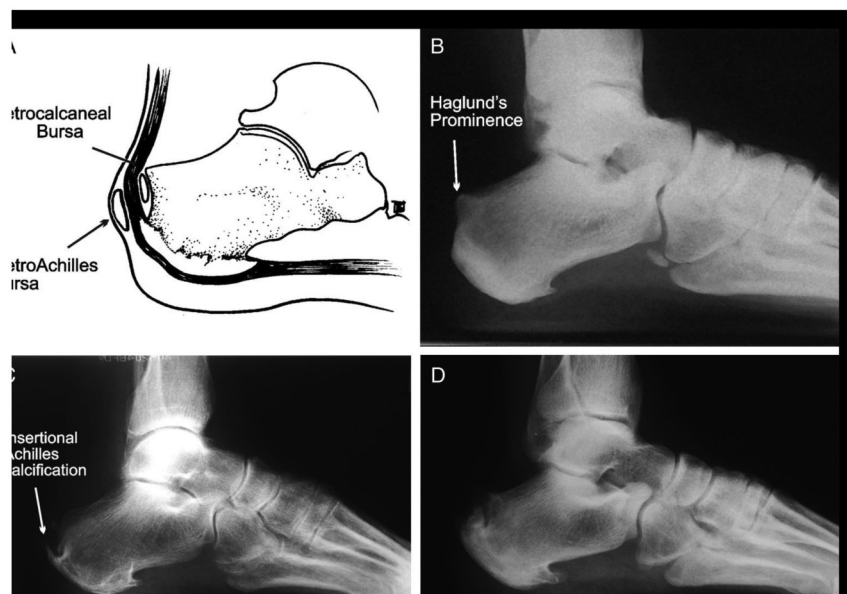
- Paratendinitis
 - Excision of thickened paratenon
- Tendinopathy
 - Debridement of diseased tendon
 - Reconstruction; Eg. FHL tendon transfer

Inflammatory SpA

- Enthesitis is a cardinal feature of spondylarthropathy (SpA) HLAB27(+)
treatment of SpA concerns refractory heel pain caused
by Achilles enthesopathy,
retrocalcaneal bursitis,
plantar fasciitis
- Early reports suggest that the anti-tumor necrosis factor monoclonal antibody,
infliximab, is very efficacious in patients with severe SpA
- Case : M/21 for 10-year inflammatory right heel pain, 3-year left heel pain,
radiographically ; erosions of both calcanei.
Prior treatments ; unsuccessful.



Insertional achilles tendinopathy



Insertional achilles tendinopathy

SIGNIFICANT HISTORY

- Chronic posterior heel pain
- Insidious onset
- Symptoms aggravated by shoes
- Symptoms relieved with barefoot or backless shoe

Insertional achilles tendinopathy

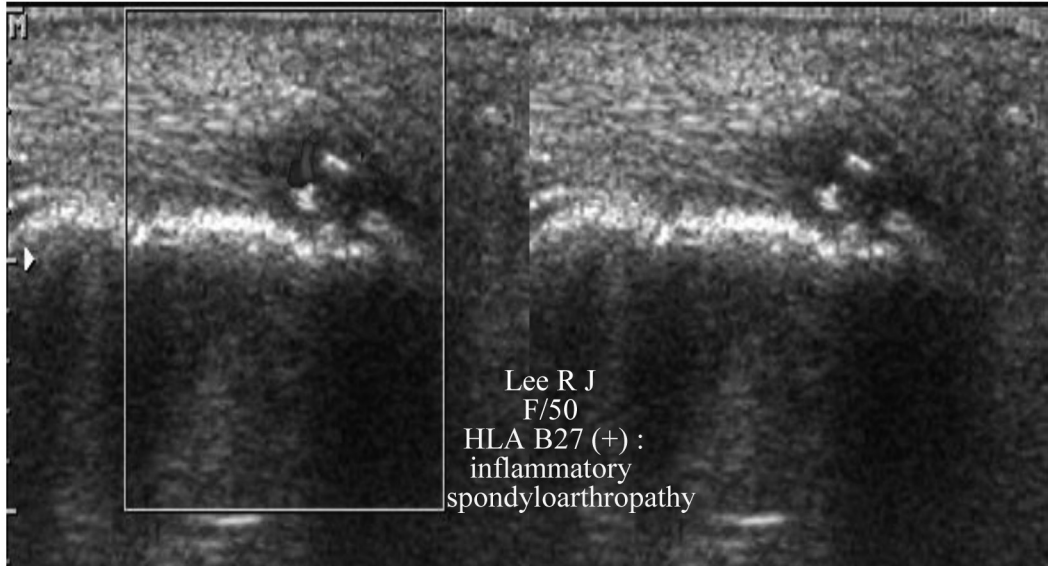
SIGNIFICANT FINDINGS

- Tenderness at Achilles insertion
- +/- central subcutaneous bony prominence
- +/- local inflammation

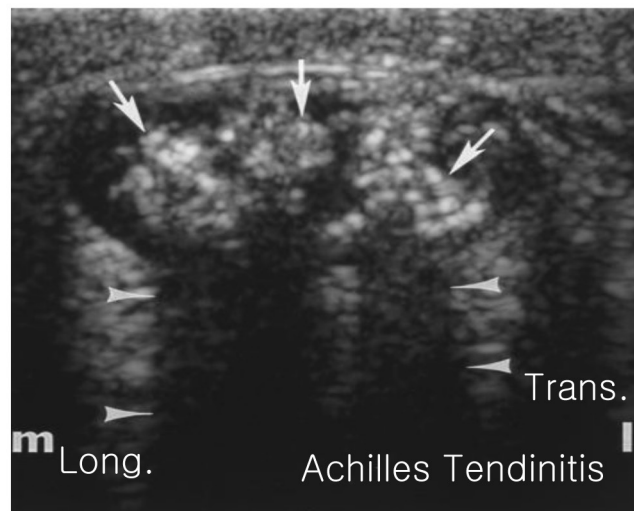
RADIOGRAPHS

- Erosion or proliferative spurring at Achilles insertion
- Intratendinous calcification adjacent to insertion

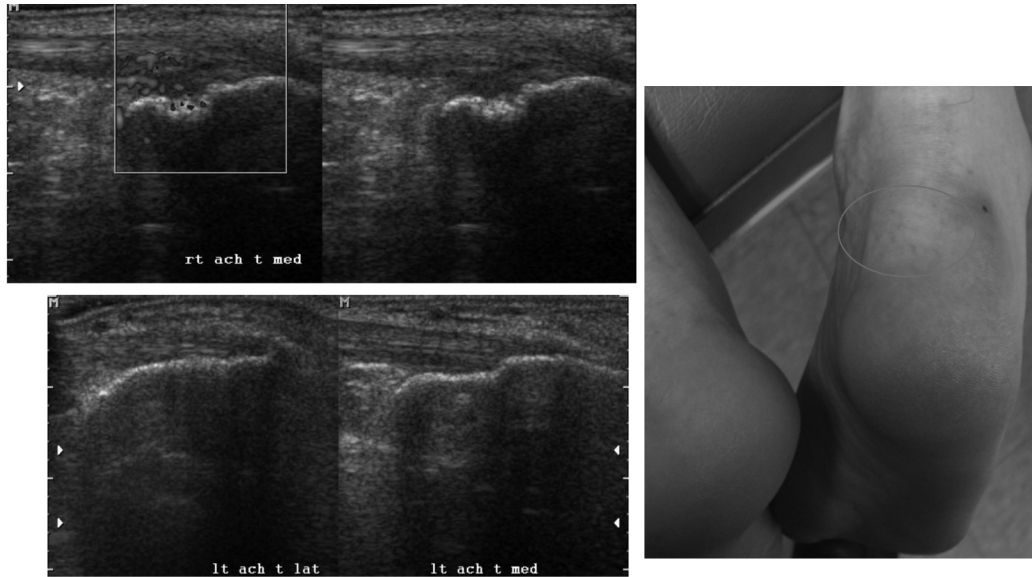
Insertional tendinopathy



Calcific Tendinitis



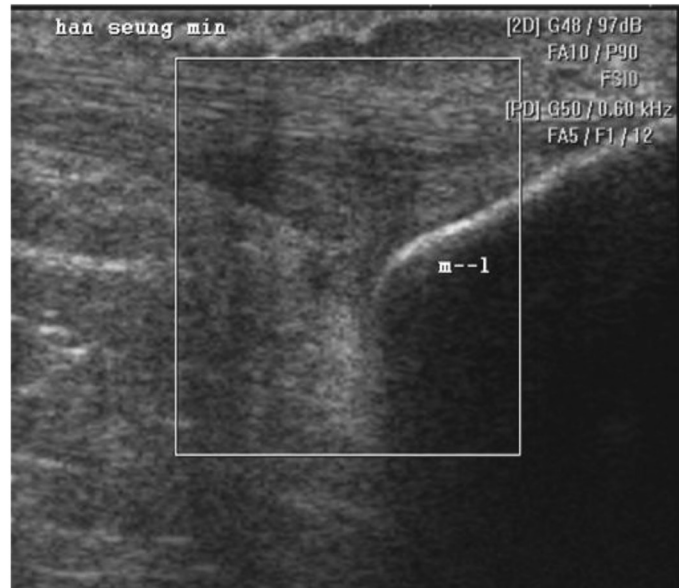
Insertional tendinopathy with RA (kim YC M/39 case)



With Retrocalcaneal bursitis (Han SM)

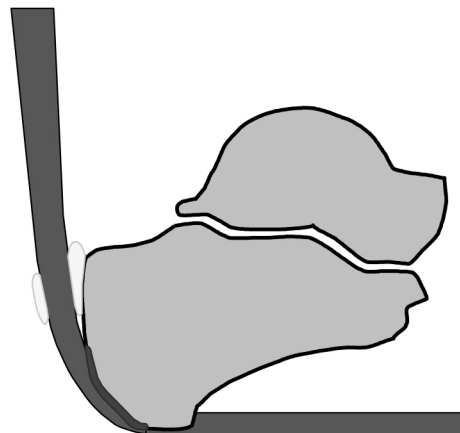


With Retrocalcaneal bursitis (Han SM, F/U after 1mo)



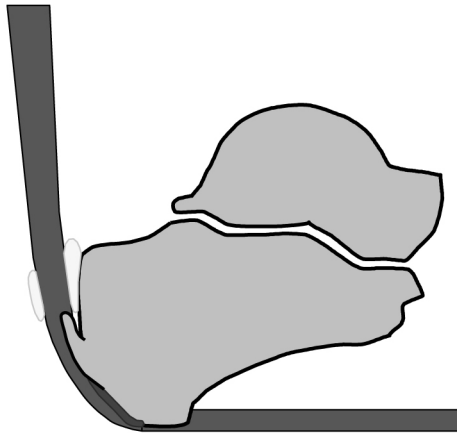
Symptoms Insertional Tendinopathy

- Pain
- Swelling
- Footwear
- Tenderness



Managements Insertional Tendinopathy

- Ice
- Anti-inflammatories
- Heel lift
- Heel cushions
- Splints
- Immobilization

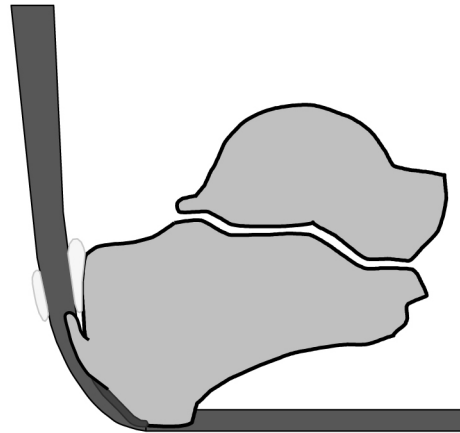


ESWT in insertional tendinopathy

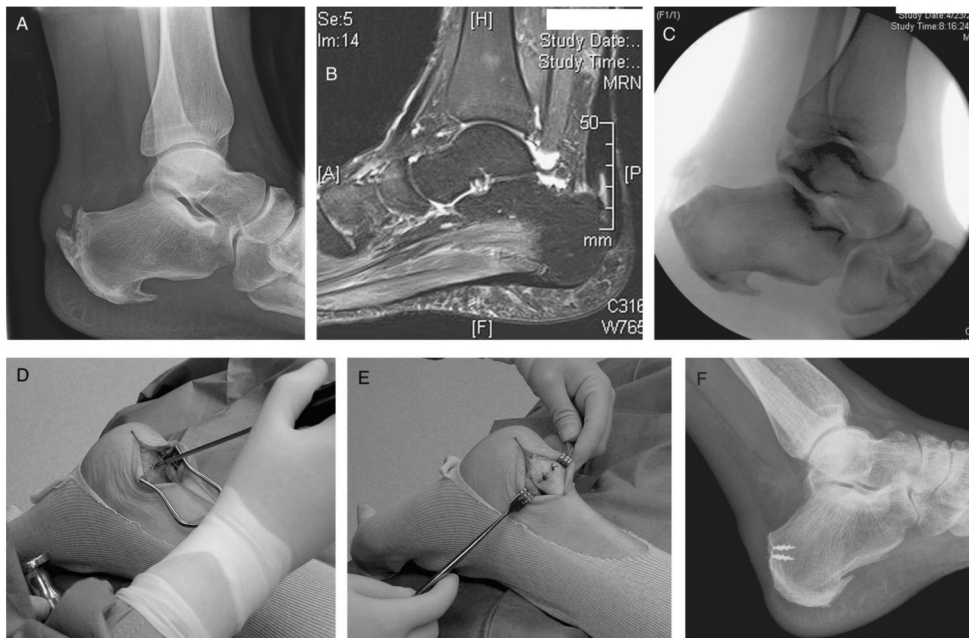
- **High-Energy Extracorporeal Shock Wave Therapy as a Treatment for Insertional Achilles Tendinopathy**
- John Patrick Furia, MD*
- **Hypothesis:** Extracorporeal shock wave therapy is an effective treatment for insertional Achilles tendinopathy. Local anesthesia field block adversely affects outcome.
- **Study Design:** Case control study; Level of evidence, 3.
- **Methods:** Thirty-five patients with chronic insertional Achilles tendinopathy were treated with 1 dose of high-energy extracorporeal shock wave therapy (ESWT group; 3000 shocks; 0.21 mJ/mm²; total energy flux density, 604 mJ/mm²), and 33 were treated with nonoperative therapy (control group). All extracorporeal shock wave therapy procedures were performed using a local anesthesia field block (LA subgroup, 12 patients) or a nonlocal anesthesia (NLA subgroup, 23 patients). Evaluation was by visual analog score and by Roles and Maudsley score.
- **Results:** One month, 3 months, and 12 months after treatment, the mean visual analog score for the control and ESWT groups were 8.2 and 4.2 ($P < .001$), 7.2 and 2.9 ($P < .001$), and 7.0 and 2.8 ($P < .001$), respectively. Twelve months after treatment, the number of patients with successful Roles and Maudsley scores was statistically greater in the ESWT group compared with the control group ($P > .0002$), with 83% of ESWT group patients having a successful result, and the mean improvement in visual analog score for the LA subgroup was significantly less than that in the NLA subgroup ($F = 16.77$ vs $F = 53.95$, $P < .001$). The percentage of patients with successful Roles and Maudsley scores did not differ among the LA and NLA subgroups.
- **Conclusion:** Extracorporeal shock wave therapy is an effective treatment for chronic insertional Achilles tendinopathy. Local field block anesthesia may decrease the effectiveness of this procedure.

Surgery Insertional Tendinopathy

- Resection
 - Spur
 - Degenerate tendon
 - Bursa
- Reconstruction
 - Eg. FHL tendon transfer



Surgery Insertional Tendinopathy



Haglund's disease

SIGNIFICANT HISTORY

- Acute or chronic posterior heel pain
- Pain aggravated by shoe pressure
- Morning pain
- Symptoms relieved with barefoot or backless shoe

Haglund's disease

SIGNIFICANT FINDINGS

- Tenderness lateral to Achilles
- Posterior lateral subcutaneous bony prominence
- +/- local inflammation / bursitis

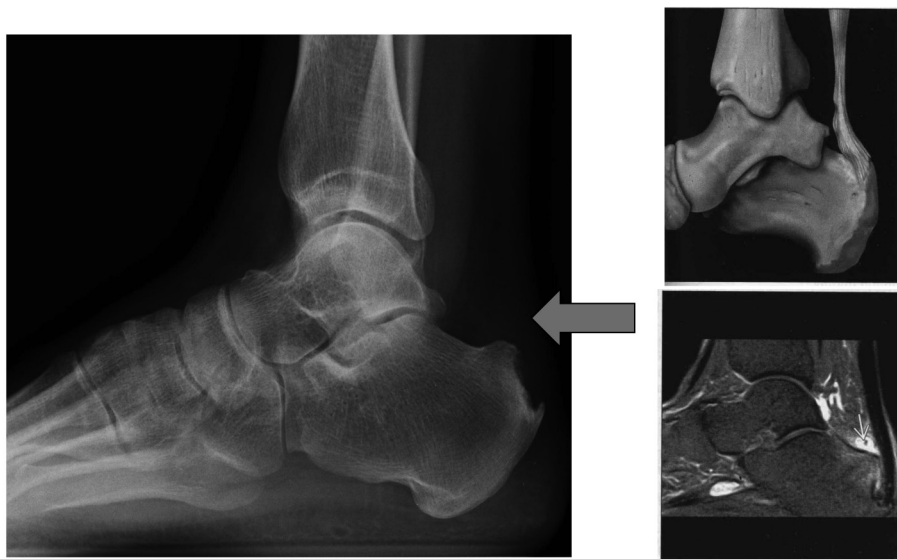
RADIOGRAPHS

- Posterior superior prominence to calcaneus - Haglund's deformity
- Soft tissue swelling - bursitis

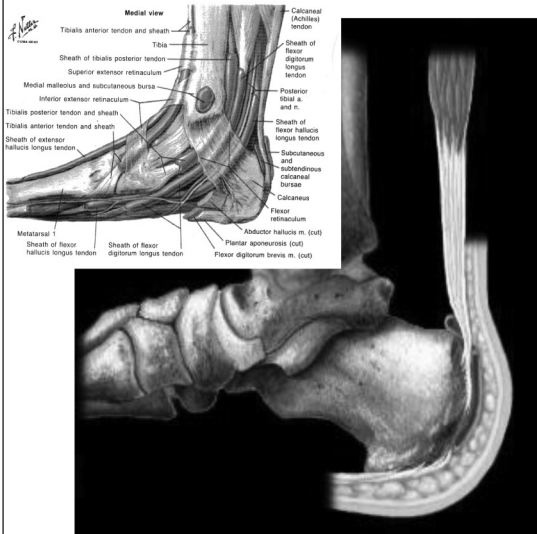
Haglund's disease



Retrocalcaneal Bursitis

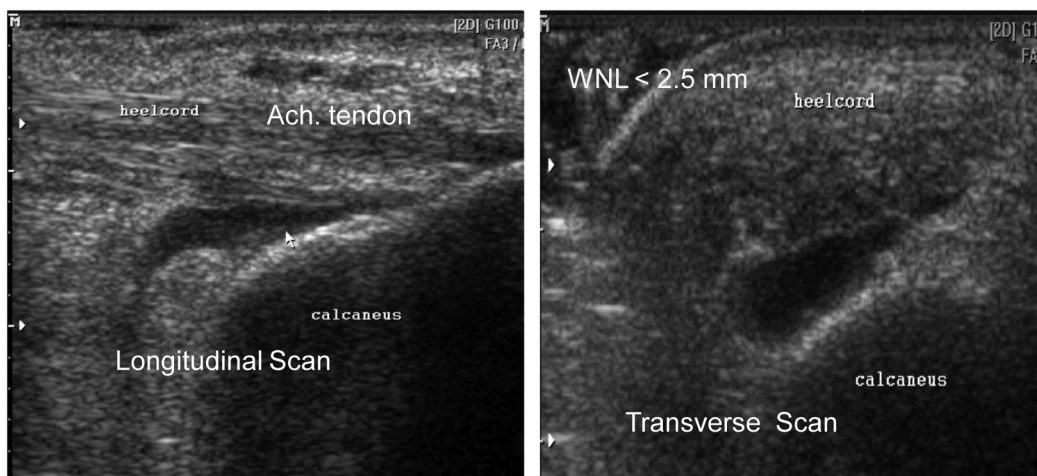


Retro-calcaneal Bursitis(1)



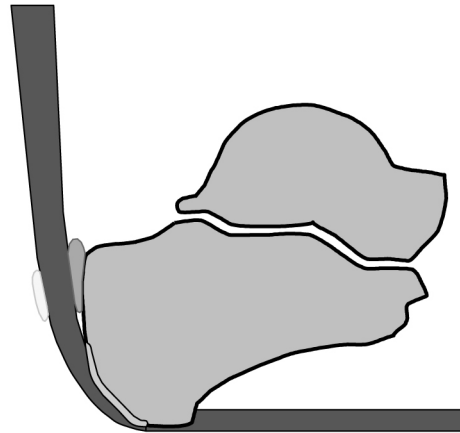
- **Bursae(or bursa) :**
flat pouches
- **Pre-achilles or retrocalcaneal bursa :** between the smooth upper part of the posterior end of the calcaneus and the deep surface of the achilles tendon
- with or without an associated achilles tendinitis

Retrocalcaneal Bursitis(2)



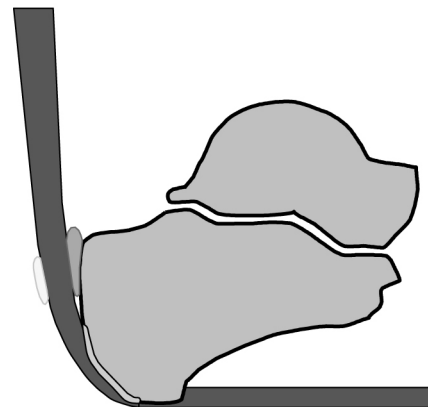
Symptoms Retrocalcaneal Bursitis

- Pain
- Swelling
- Footwear
- Tenderness



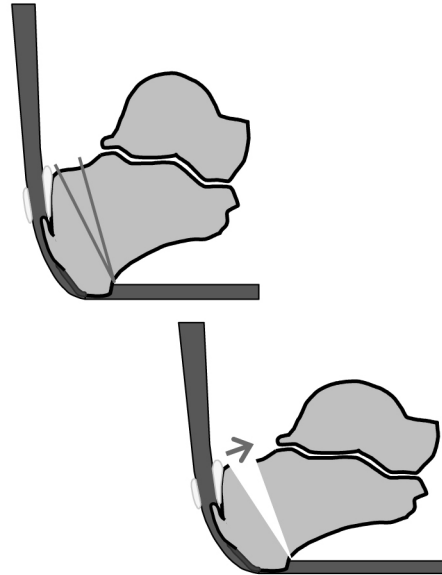
Managements Retrocalcaneal Bursitis

- Ice
 - Anti-inflammatories
 - Heel lift
 - Low/cushioned heel counter
 - Surgical resection
 - cf) Injection
- caution : immobilization



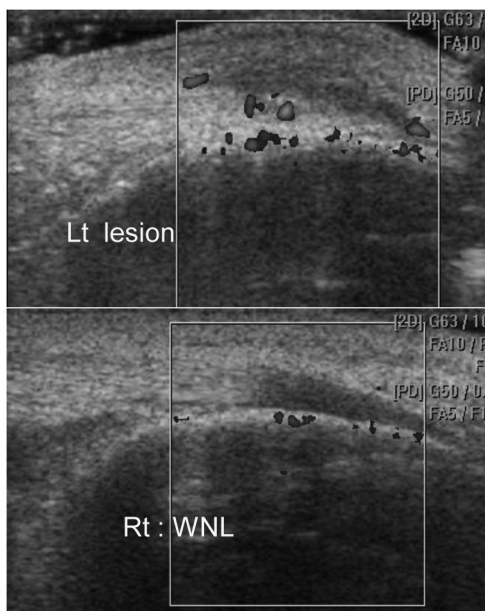
Surgery Haglund's disease

- Resection
 - Spur
 - Degenerate tendon
 - Bursa
- Osteotomy



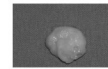
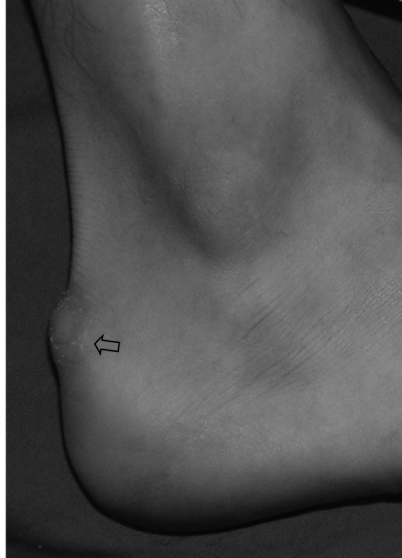
Adventitial bursitis

Retro-achilles Brusitis, superficial SQ bursitis



Adventitial bursitis

Retro-achilles Brusitis,

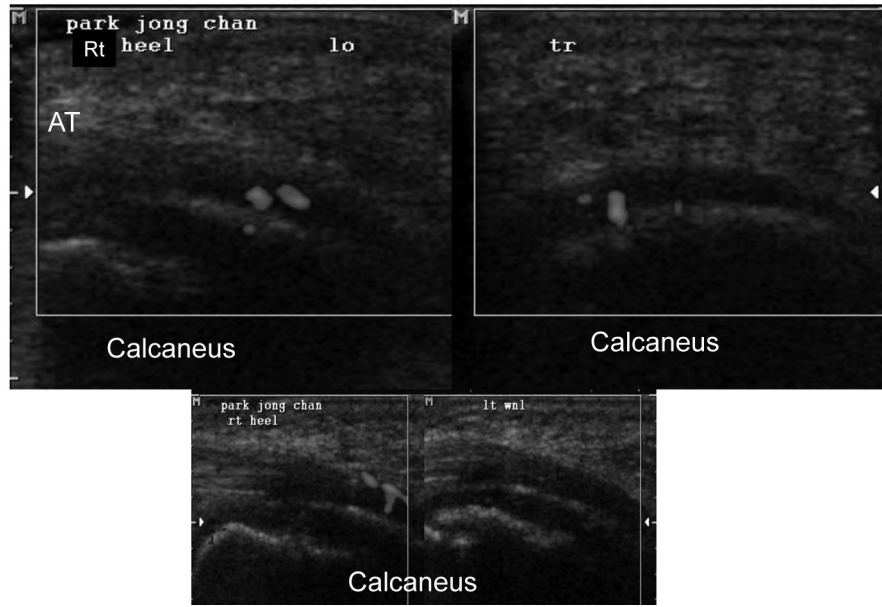


종골 골단염(calcaneal apophysitis)

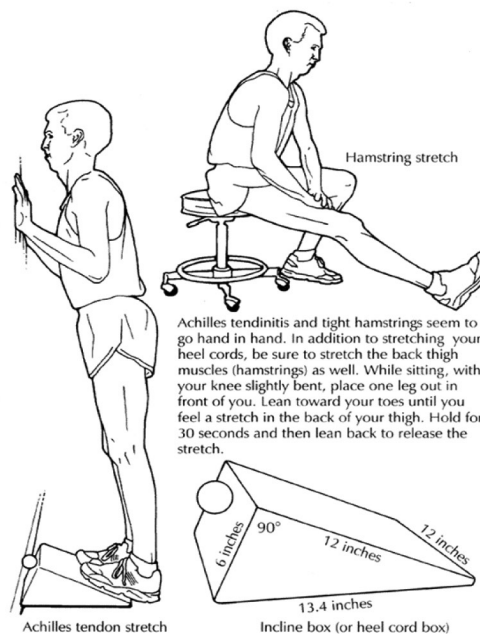
- Sever 's disease
- 골단 폐쇄전의 소아 질환:
- 8-13세사이의 활동적인 남아
- 종골후방 통증: 종골의 아킬레스건 부착부에서 견인 골단염(apophysitis)
- 초기 방사선 검사는 조각난 골단이 정상적인 면과 비슷
진단시 어려움
- 10대에서 아킬레스건의 부착 부위 아래 발 뒤꿈치에
압통과 통증 호소

치료: 자연 회복

Calcaneal apophysitis(종골 골단염)



아킬레스건 스트레칭



Achilles tendon strengthening

힘줄(건) 강화 프로그램 기준.

- 촉진할 때 국소 부위에 압통이 없어야 한다
- 완전히 통증없이 스트레칭(신장운동)을 한다
- 아침 통증 또는 강직이 없어야 한다
- 보행할 때 통증이 없어야 한다
- 종아리를 올릴 때 통증이 없어야 한다

Management of post. Heel pain

