2012 대한발의학회
추계학술대회

흔하지 않지만 감별해야 하는 발의 문제들

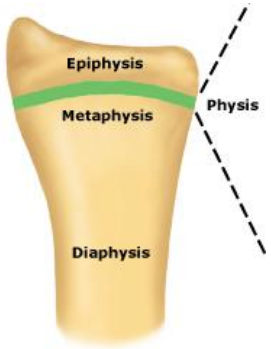
성균관의대
삼성서울병원 재활의학과
황지혜

서론…강의의 목적

- 성장기 동안…증상을 호소하는 문제들은 흔하지 않지만…
  - 많은 문제들이 inactive child에서는 증상이 없을 수 있다.
  - Congenital, anatomical abnormality에 대한 이해를 통해 과도한 진단적/치료적 접근을 방지할 수 있다.

Osteochondroses (Apophysitis):

- heterogenous group of injuries to the epiphyses, physes, and apophyses of children during periods of rapid growth
- **Apophysitis** - subset of osteochondroses occurring at bony attachment sites of musculotendinous unit



- **Etiology ??**

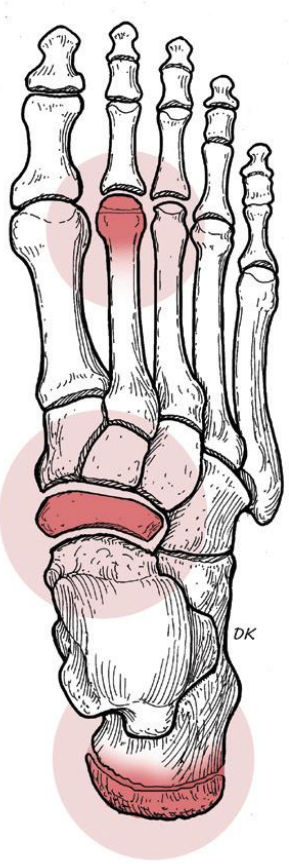
  from a mechanical stress on the developing center of ossification

  leads to changes that resemble avascular necrosis

- increased activity or sports will make **symptoms**

- in general, **self-limited**; includes rest, ice, analgesics and stretching

Common Locations of Osteochondrosis in Patients with Immature Skeletons



Foot
Calcaneal apophysis = Sever's disease
Metatarsal head = Freiberg's disease
Navicular bone = Köhler's disease

Hip
Femoral head epiphysis = Legg-Calvé-Perthes disease
Knee
Tibial tubercle apophysis = Osgood-Schlatter disease
Inferior pole of patella = Sinding-Larsen–Johansson disease
Elbow
Medial epicondyle = Medial epicondyle apophysitis
Humeral capitellum = Panner disease
Back
Anterior vertebral end plates = Scheuermann disease

Kohler's disease

- osteochondrosis of the **tarsal navicular**
- 2-9세 (or 4-9 years old),
- higher prevalence in boys
- present with unilateral weight-bearing midfoot pain and limp with **tenderness to palpation over navicular**

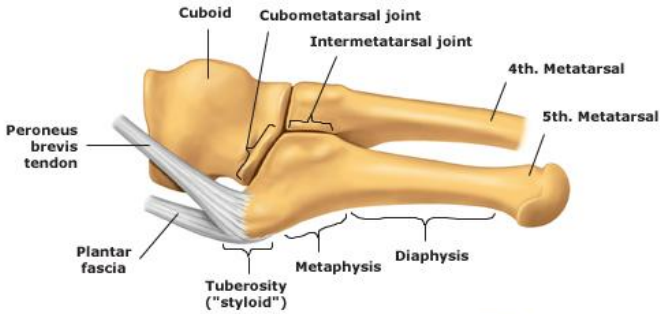
- on X-ray,
  - the navicular appears sclerosis and narrowing/flattening/fragmentation
  - radiological reconstitution needs over 8 months
- **usually resolves spontaneously with no long-term sequela**
  - arch support for less discomfort child
  - short-leg walking cast for 3wks-reevaluation-additional casting for 3wks for severe pain

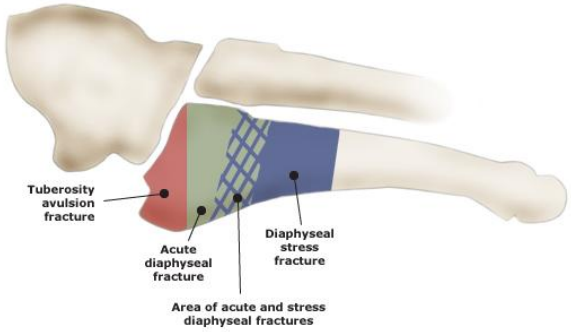
→ 보이는 것보다는 큰 문제가 아님!

Iselin's disease

- traction apophysisits of the **base of the 5th metatarsal**
- 10대 초반
- on X-ray,

  - orientation of the apophysis of the fifth metatarsal is parallel to the shaft
  - should not be confused with a fracture or accessory bone

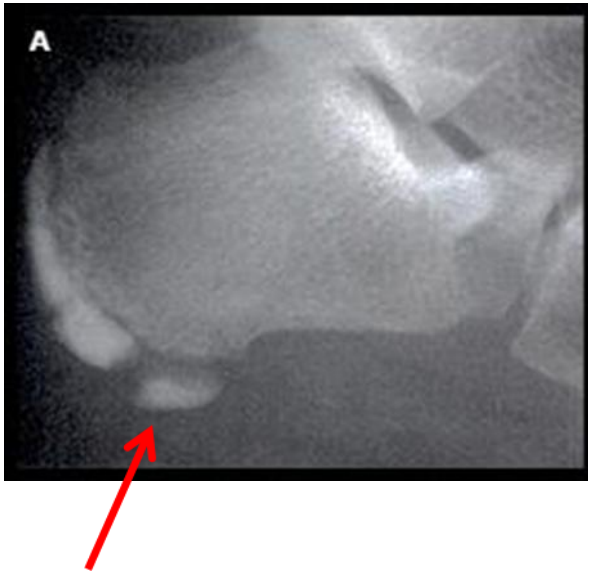




Calcaneal apophysitis / avulsion injury

A) **True avulsion injury** of an inferior segment of the calcaneal apophysis - treated in a cast for comfort.

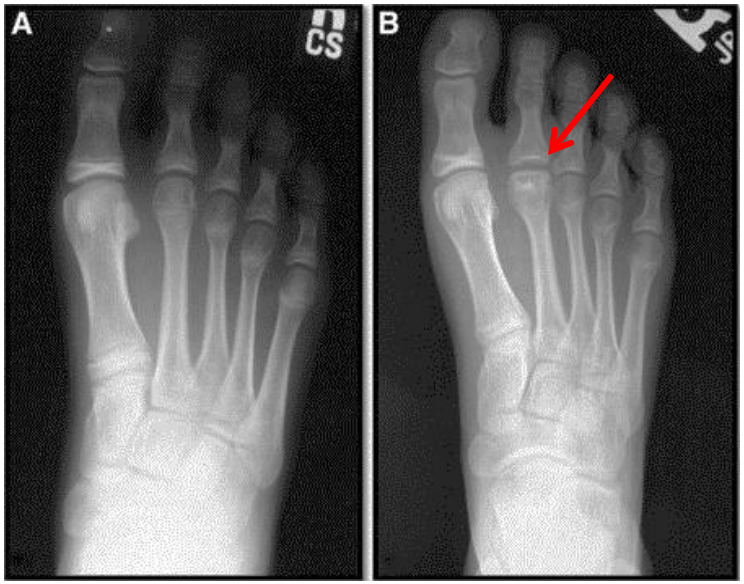
B) normal apophyseal segmentation.



Freiberg's disease

- osteochondrosis of the **2nd (68%), 3rd (27%), or 4th (5%) metatarsal**
- most commonly in **adolescent girls**, usually in late teens (10대 후반)
- gradual onset of dull, aching pain with swelling, soft tissue thickening over the forefoot with tenderness on the Involved metatarsal head
- on X-ray, widening of the MTP joint followed by collapse, sclerosis of MT head and secondary thickening of MT shaft

  - reossification and radiographic healing takes 2-3 yrs



→ 성인이 된 후 퇴행성변화로 증상이 생기는 경우가 많다!

- **Treatment** (depending on the extent of symptoms and pathologic stage)

  - rest, avoidance of activities

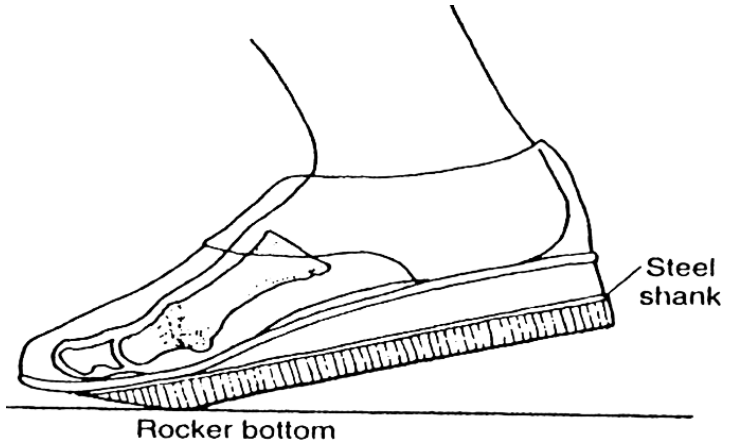
  - **relieving the pressure on the MTH**

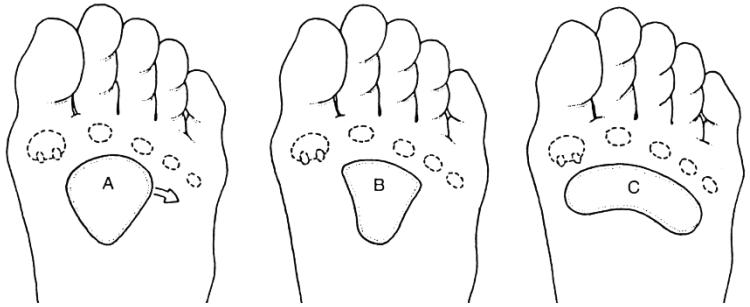
    - molded MT pad, bar

      & low heel, stiff-soled shoe

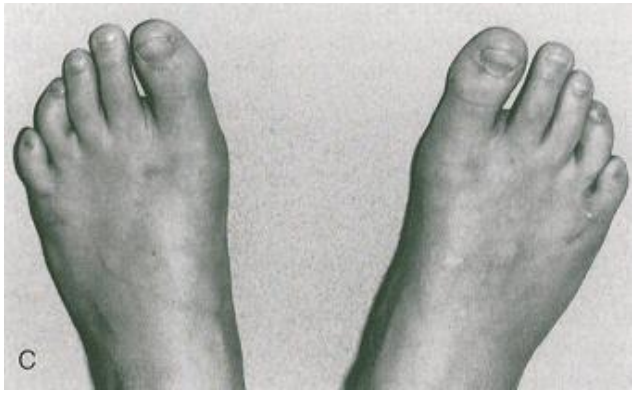
  - short-term immobilization (6-12wks)

  - surgical management



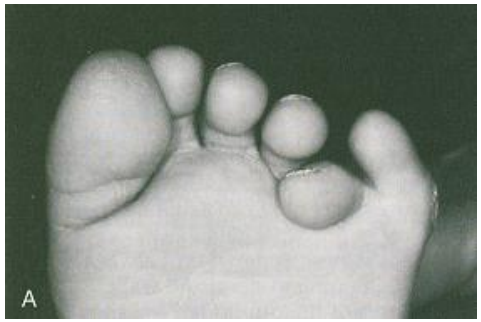


Congenital curly //overlapping toes



- most commonly involving the 4th & 5th toe
- usually bilateral, highly familial
- deviates in a plantar and medial direction with varus rotation at the level of DIPJ
- asymptomatic during childhood
- developing pain after growing because of shoe
- treatment, spontaneous correction in 25-50%

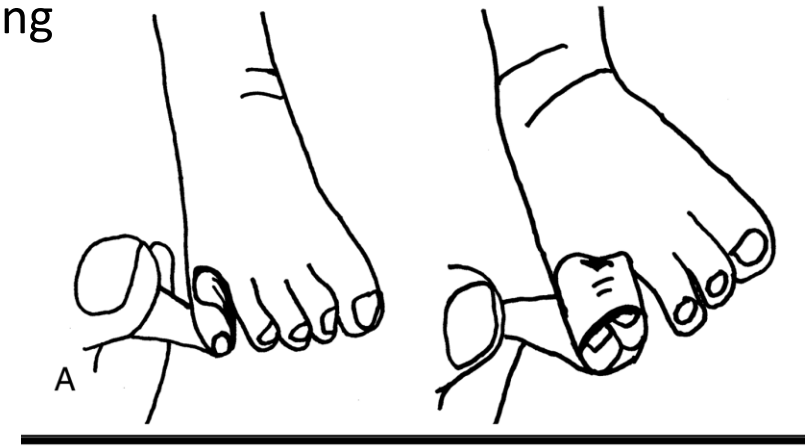
  If, need surgical correction at 3-4 yrs old

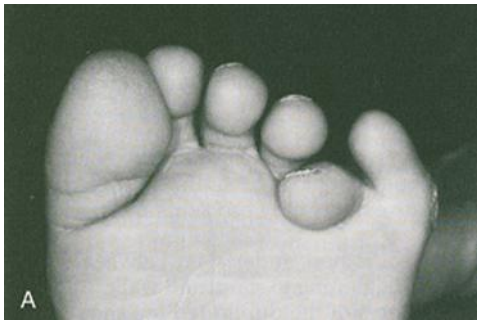


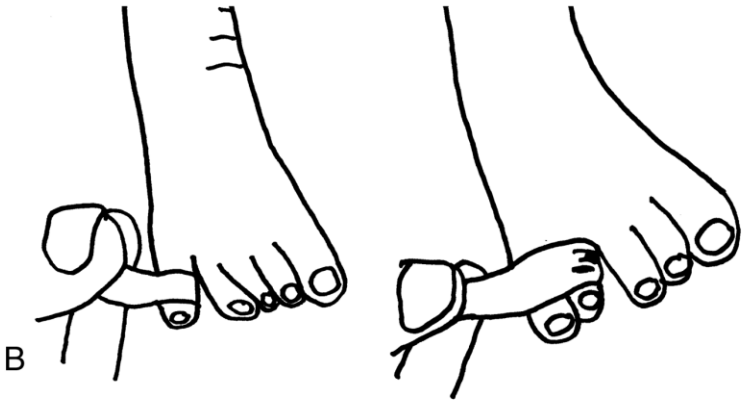
** Prospective study of a noninvasive treatment for two common congenital toe abnormalities.

(Smith WG et al, Paedir Child Health 12(9), 2007)

; Simple, office-friendly technique of taping
underlapping and overlapping toes
in the newborn
proved successful in 94% of the toes







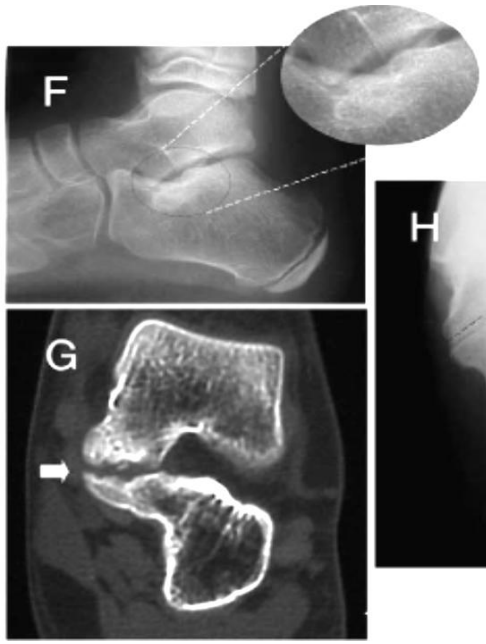
Bipartite / tripartite hallucal sesamoids

- incidence from 15 to 20%, most commonly on the medial sesamoid
- unilateral
- sometimes confused with sesamoid fracture

Tarsal coalitions:

- common cause of **rigid flatfoot**
- **talocalcaneal** (>45%), **calcaneonavicular coalition** are most common
- often bilateral,
- osseous, non-osseous coalition (cartilaginous or fibrous)

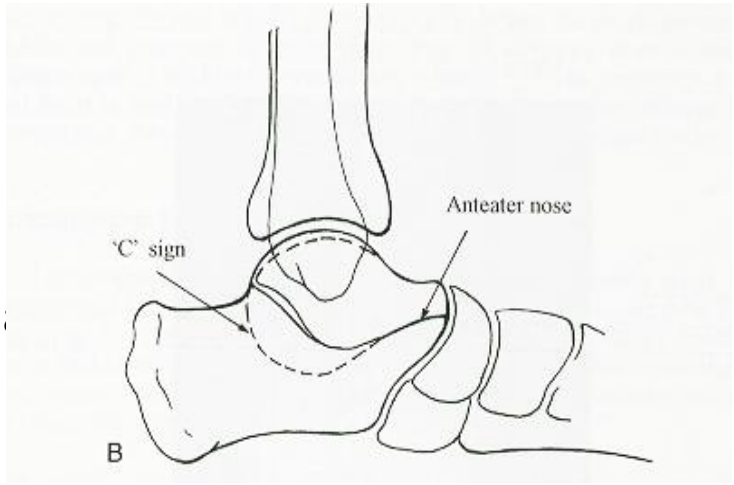
1. Talocalcaneal coalition

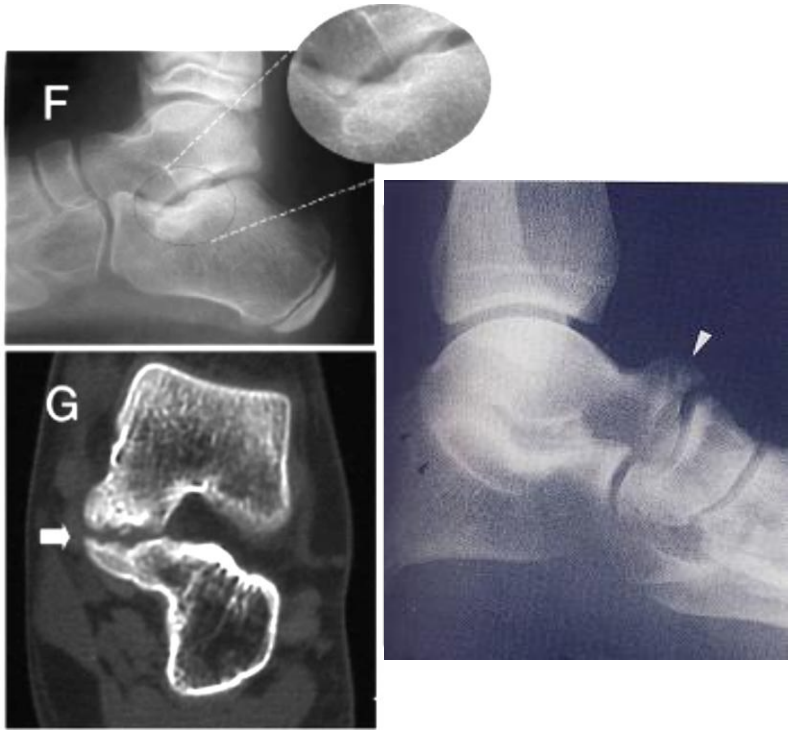


2. Calcaneonavicular coalition

3. Talonavicular coalition

- **Imaging studies**
  - on lateral X-ray;
    - “C” sign(talocalcaneal coalition)
    - anteater nose sign (calcaneonavicular co
  - on oblique view;
    - best for calcaneonavicular coalition
  - **MRI**; best, especially for <u>nonosseous coalition</u>

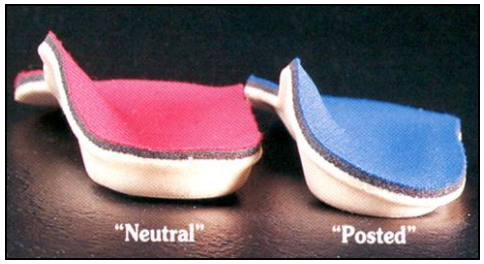




- not all tarsal coalitions are symptomatic (**over 70% - asymptomatic**)
- **pain** (usually over anterolateral foot or sinus tarsi, over talonavicular J or poorly localized) begins during late childhood or early adolescence after vigorous activities
- onset of symptoms tends to correlate with the age at which cartilaginous or fibrous coalitions ossify
  - talocalcaneal; 12-16yrs
  - calcaneonavicular; 8-12yrs
  - talonavicular; 3-5yrs

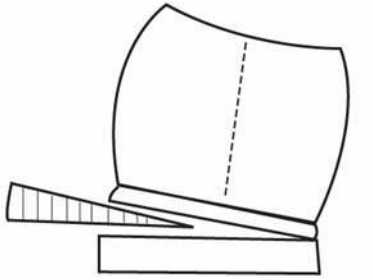
- **restrict subtalar motion with the hindfoot in an everted, valgus position**
  - talocalcaneal >> calcaneonavicular >>
- increased compensatory motion of the midtarsal joints, causing strain on talonavicular ligament and capsule, adaptive shortening of the peroneal tendon and loss of longuitudinal arch

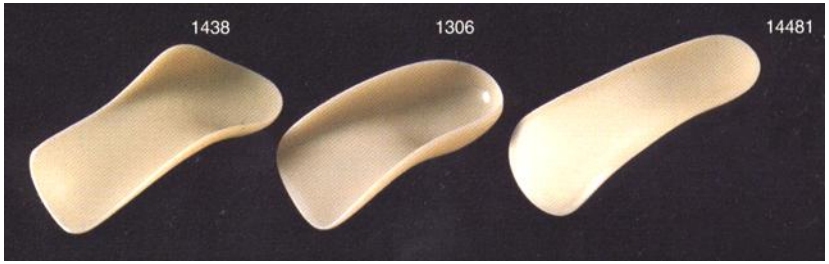
- **Treatment**



- <u>asymptomatic; no treatment</u>
- symptomatic;
  - footwear modification and/or insert for **STJ control**
  - 3-6wks immobilization
    followed by molded medial arch support
  - corticosteroid injection on STJ

** severe case
  - surgical management
    (resection and fat/tendon/muscle interposition, arthrodesis,
    calcaneal osteotomy…)





Congenital / Primary lymphedema


Thank you