The wizard of os: accessory ossicles from the hip and lower extremities

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Learning objectives

1. Recognize the most common accessory ossicles in the hip and lower extremities
2. Differentiate accessory ossicles from their most common misdiagnoses
3. Recognize the different presentations of accessory ossicles through various imaging modalities
Background

Accessory ossicles are unfused secondary ossification centers, separate from the adjacent bone. Unlike sesamoid bones, which function as friction reducers to protect tendons from injury, accessory ossicles are thought to be supernumerary bones without definite function. Most accessory ossicles are congenital, anatomical variants, but some rarely arise as a result from trauma or local degenerative disease. Symptomatic presentations are rare and thus a search for underlying pathology should be performed in these cases. Normally, however, accessory ossicles are typically clinically insignificant and found incidentally. Nonetheless, these osseous structures may sometimes be incorrectly diagnosed as fractures, loose bodies or other infectious processes, leading to unnecessary workup and management.
Findings and procedure details

**HIP AND KNEE**

1. *Diagrammatic overview*
   
   1. Fig. 1 on page 11 and Fig. 2 on page 11

2. *Pictorial review*

   - **Os acetabuli**
     - **Prevalence:** 3%[1]
     - **Location:** Adjacent to the acetabular rim
     - **Overview:** Or os acetabulare, an unfused secondary ossification center at the acetabular rim. Also thought to represent a rim fracture fragment secondary to a cam type femoroacetabular impingement (FAI). [2,3] Studies have proposed that "true" os acetabuli have cartilagenous growth plates more parallel to the joint surface, whereas FAI acetabular rim fragments growth plates are more perpendicular to the joint surface. [2,4] May be misdiagnosed as a fractured osteophyte, acetabular chondro-ossification or prior acetabular fractures.[1]
     - **Radiographic characteristics:** Usually rounded with a concave lateral border and convex medial border. May be bilateral and/or fused to the acetabulum. AP pelvis, false profile and Dunn views of the hip are recommended to fully characterize the femoral and acetabular anatomy.[5]

   - **Os fabella**
     - **Prevalence:** 10-30%; 63-85% bilateral; [6] higher rates in Asian population (66-87%).[7]
     - **Location:** Lateral head of the gastrocnemius (rarely in the medial head) articulating with the lateral or medial femoral condyle. [6,8]
     - **Overview:** Bilateral, bipartite, tripartite or double. May cause posterolateral femoral pain exacerbated by direct pressure, known as fabella syndrome, due to friction between the fabella and the posterolateral femoral condyle. [1,2] Has been shown to present with common fibular nerve palsy. [7] May be misdiagnosed as a loose body.
     - **Radiographic characteristics:** Elliptical or circular in shape and may vary in size, from 3.5-13.5 mm in length, 2-9 mm in width and 1.5-10 mm in depth.[6] Best visualized in lateral radiographs of the knee.

   - **Cyamella**
• **Prevalence:** Extremely infrequent in humans
• **Location:** Within the popliteus tendon, at the popliteus myotendinous junction.[1,9]
• **Overview:** Also known as the popliteal fabella, or fabella distalis. Articulates with the posterior surface of the lateral femoral condyle. [6] Considered to be a sesamoid bone, as it lies within the popliteus tendon.[2,6] Seen in approximately 84% of dogs, 100% of cats and decreases in prevalence in higher primates and humans.[10] Rarely shown to cause symptoms, with one case report citing sesamoiditis with pseudo-locking and clicking. May be misdiagnosed as an intra-articular loose body, a fabella, or heterotopic ossification.[2,9]
• **Radiographic characteristics:** Best seen on AP radiographs of the knee, most commonly found within the lateral femoral groove. [3] On T1, T2 and T2*-weighted MR images, the cyamella appears as an ossicle with low signal intensity along its borders. [9]

*See Fig. 2 on page 11 for diagram and Fig. 5 on page 14 and Fig. 6 on page 29 for case*

• **Meniscal ossicle**
  • **Prevalence:** 0.15%.[3]
  • **Location:** Posterior horn, within medial meniscus[6]
  • **Overview:** Three theories as to its origin: it is an anatomical variant, it is a post-traumatic result of heterotopic ossification, or it is the product of mucoid degeneration.[2] Composed of mature lamellar and cancellous bone, surrounded by hyaline cartilage.[6] Usually incidental and asymptomatic, but may produce diffuse pain and a locking sensation, mimicking a torn meniscus or an intra-articular loose body. [3] Should not be confused with an avulsion of the PCL.
  • **Radiographic characteristics:** Best seen on AP radiographs. Lateral views have shown that the ossicle moves with the tibia during knee rotation.[6] MR imaging is useful in differentiating it from common misdiagnoses, exhibiting marrow intensity on all sequences, with a surrounding peripheral rim of low signal intensity, corresponding to its cortex.[2,3]

*See Fig. 2 on page 11 for diagram and Fig. 7 on page 15 for case*

**FOOT**

1. **Diagrammatic overview**
   1. **Fig. 8 on page 16**
2. **Pictorial Review**

• **Os trigonum**
  • **Prevalence:** 7-25%
• **Location**: Posterolateral to the talus
• **Overview**: Secondary ossification center at the posterior process of the talus. The posterior talocalcaneal ligament may arise from it, forming the trigonalcalcaneal ligament. The posterior talofibular ligament may also attach to its dorsal aspect. May be fused, known as a *trigonal process*, or *Stieda’s process*. [3] May cause *posterior impingement syndrome*, or *os trigonum syndrome*, generally seen in gymnasts, dancers and soccer players, due to repetitive impaction of the ossicle between the calcaneus and the posterior tibia during plantar flexion, causing tenderness to palpation and pain when pointing the toes, the "nutcracker sign", mimicking a fracture of the medial or lateral (Shepherd fracture)[3,11] tubercles of the posterior process of the talus or an Achilles tendon injury.
  
• **Radiographic characteristics**: Usually triangular with well-corticated and sclerotic borders, best seen in lateral or mortise radiographs of the foot and ankle.[12] CT should be performed when a posterior talar tubercle fracture is suspected, as it may mimic an os trigonum on lateral plain films.

• *See Fig. 8 on page 16 for diagram and Fig. 9 on page 17 and Fig. 18 on page 25 for cases*

• **Os vesalianum pedis**
  
• **Prevalence**: 0.1-5.9%, with a mean around 1%
• **Location**: Adjacent to the base of the fifth metatarsal, embedded within the peroneus brevis tendon (PBT)
• **Overview**: Failed fusion of a secondary ossification center with the fifth metatarsal. May be misdiagnosed as an avulsion fracture of the fifth metatarsal, Jones fracture, and fifth metatarsal apophysitis (Iselin disease).[2] Should also be differentiated from os peroneum, which is found posterolaterally to the base of the fifth metatarsal. May be found unilaterally or bilaterally and may present with lateral foot pain, necessitating surgical excision, which could be complicated when PBT fibers attach to the ossicle, requiring tenorrhaphy or tenodesis. [6,12,13]
  
• **Radiographic characteristics**: Discrete, separate, well-corticated bony structure that articulates with the base of a well-developed fifth metatarsal and the cuboid bone. Best seen in lateral oblique radiographs.

• *See Fig. 8 on page 16 for diagram and Fig. 10 on page 18 for case*

• **Os peroneum**
  
• **Prevalence**: Around 26% in its ossified form; 60% bilateral
• **Location**: Embedded within the peroneus longus tendon (PLT), in the region of the cuboid canal, at the level of the calcaneocuboid joint
• **Overview**: Technically a sesamoid since it is found within the PLT. It has been hypothesized that this structure is part of the normal skeleton,
but may be cartilagenous, fibrocartilagenous or ossified. Usually found as a single ossicle, but may appear as multipartite (25-30%), which may be more easily confused with a cuboid fracture. May itself be subject to fractures or diastasis of a multipartite ossicle.

- **Radiographic characteristics:** Round or oval-shaped ossicle, seen as a separate, corticated structure. Best seen in lateral or oblique views. A fractured os peroneum may be more easily differentiated radiographically when there is diastasis and proximal migration of the fragment with traction of the PLT, which signifies complete PLT rupture.

- *See Fig. 8 on page 16 for diagram and Fig. 11 on page 19 for case*

- **Os subfibulare**
  - **Prevalence:** Reported between 0.2% and 2.1% in general population
  - **Location:** Posterior to the tip of the lateral malleolus (sub-fibula)
  - **Overview:** Normally asymptomatic, but may cause ankle pain. There have been reports of it forming a painful pseudo-arthrosis, and resection of the ossicle results in complete symptomatic relief. There are two theories regarding its origin: it is caused by an avulsion fracture pulling the anterior talofibular ligament, or it is the result of an accessory ossification center.[14]

- **Radiographic characteristics:** Round to elongated shape, seen as a separate, corticated structure. Can sometimes appear anterior to the lateral malleolus in some views, giving it a bifid appearance. Best seen with mortise and AP views.

- *See Fig. 8 on page 16 and Fig. 12 on page 20 for diagrams*

- **Os subtibiale**
  - **Prevalence:** Between 0.2-1.2%
  - **Location:** Below the tip of the medial malleolus, between the medial malleolus and the talus
  - **Overview:** Failure of fusion of a secondary ossification center of the distal tibia, medial malleolus. May be misdiagnosed as an isolated medial malleolar avulsion fracture. Usually more closely related to the posterior colliculus of the medial malleolus. Usually asymptomatic, though may cause pain or degenerative changes due to overuse or trauma.[3,6]

- **Radiographic characteristics:** Rounded bony structure with smooth margins at the tip of the medial malleolus. It is usually relatively large in diameter, with some studies proposing a diameter of at least 4mm. No appreciable defect of the medial malleolus should be visualized.

- *See Fig. 8 on page 16 and Fig. 13 on page 21 for diagrams*

- **Os calcaneus secundarius**
  - **Prevalence:** Between 0.6-7%, with male predilection (7-11%, versus 6-7% in females)
• **Location:** At the anteromedial border of the calcaneus, the cuboid, the talar head and the tarsal navicular

• **Overview:** The product of an unfused apophysis of an atypical calcaneal bony process. Usually asymptomatic and without any clinical significance, with pain or subtalar motion restriction in rare symptomatic cases. May be misdiagnosed as an antero-superior calcaneal process fracture due to similar appearance. Some believe the ossicle to be a remote non-union avulsion fracture rather than an accessory bone.[15]

• **Radiographic characteristics:** Triangular-shaped ossicle, usually ranging between 3-4mm and best visualized in oblique views of the foot or through CT imaging. MRI may be needed to differentiate it from a fracture, as it does not usually present with bone marrow edema.

*See Fig. 8 on page 16 and Fig. 14 on page 22 for diagrams*

• **Os intermetatarseum**

• **Prevalence:** Between 0.1-6.8%, though anatomical studies have shown a prevalence of up to 13%. Bilateral in 33% of cases.

• **Location:** Dorsally between the bases of the first and second metatarsal bones

• **Overview:** Either a true accessory bone, or a supernumerary bone as a variant of central polydactyly. Usually incidental, though may produce a painful syndrome, with dorsal midfoot pain, paresthesias and numbness along the first intermetatarsal space due to compression of the sensory branches of the deep or superficial peroneal nerves. May be misdiagnosed as a fractured fragment from the base of the first or second metatarsal ('fleck' sign in a Lisfranc injury). Three types have been described:[3,6]

• • Free-standing: independent ossicle
  • Articulating: forms synovial joint with 1st or 2nd metatarsal or 1st cuneiform
  • Fused: forming a spur

• **Radiographic characteristics:** Round, spindle-shaped, oval or kidney-shaped, usually proximal to the bases of the first and second metatarsal bones. Best visualized on AP foot radiographs.

*See Fig. 8 on page 16 for diagram and Fig. 15 on page 22 for cases*

• **Os supratalare**

• **Prevalence:** Very rare ossicle, between 0.2-0.9%

• **Location:** Dorsal aspect of the talar neck

• **Overview:** Usually incidental and asymptomatic. Not known to cause any clinical findings, though may be misdiagnosed as a cortical avulsion fracture of the talar head, an osteophyte or an osteogenic tumor.[3,6]

• **Radiographic characteristics:** Small, oval or spindle-shaped accessory bone oriented transversally with a radiolucent gap over
the dorsum of the talar neck. Best seen in lateral foot and ankle radiographs.

- **See Fig. 8 on page 16 and Fig. 16 on page 23 for diagrams**
- **Hallux (and lesser metatarsal) sesamoids**
  - **Prevalence:** Always present on first metatarsal head. Seen in 0.2-4.3% of lesser metatarsals (second to fifth). 70% bipartite (usually medial sesamoid) and bilateral. 33% multipartite, also usually medial sesamoid.
  - **Location:** At the level of the first metatarsal head, within the medial and lateral slips of the flexor hallucis brevis tendon
  - **Overview:** Considered part of the normal skeleton on the first MTP joint. Rare on the lesser toes or hallux interphalangeal joint. Bipartite when they develop from two ossification centers that fail to fuse. This is often the case for the medial hallux sesamoid. May present with chronic pain, or sesamoiditis. If surgically excised, both sesamoids must be removed to avoid abnormal stress on the remaining sesamoid, that predispose it to stress fractures and osteonecrosis. May be misdiagnosed as a fractured sesamoid, especially if bipartite, though this usually presents with acute pain and tenderness on palpation.[17]
  - **Radiographic characteristics:** Well-corticated structure that varies in size and shape. When bipartite has two well-corticated fragments with an irregular line of articulation. A fractured sesamoid tends to show a sharp, radiolucent, uncorticated line, with its two pieces fitting well together.
  - **Os supranaviculare**
  - **Prevalence:** Between 1-3.5%; may be more common in individuals with numerous foot deformities
  - **Location:** On the dorsal margin of the talonavicular joint space
  - **Overview:** Also talonavicolare dorsale, talonavicular ossicle or Pirie's bone. Usually asymptomatic, though may cause dorsal foot pain and may fuse with the navicular bone, forming a spur. May be misdiagnosed as a cortical avulsion fracture of the tarsal navicular. Clinical findings and a mechanism of injury, such as hyper plantar flexion of the ankle joint or history of high heel use, may help differentiate the two. A fractured fragment will show lucency at the fracture line and elicit tenderness upon direct palpation.[18]
  - **Radiographic characteristics:** Rounded or triangular-shaped, with average dimensions of 6 mm x 5 mm x 6 mm, best seen in lateral radiographs of the ankle and sagittal MR and CT images.
  - **Os tibiae externum**

*See Fig. 8 on page 16 for diagram and Fig. 17 on page 24 for case

*See Fig. 8 on page 16 for diagram and Fig. 18 on page 25 for case
Prevalence: 4-28.3%; 50% bilateral

Location: Posteromedial aspect of the foot, adjacent to the posteromedial tuberosity of the navicular bone within the distal posterior tibial tendon (PTT) (25%)

Overview: Also os naviculare, naviculare secundarium or accessory navicular. Thought to arise from a secondary ossification center adjacent (Type II) or fused (Type III) to the navicular tuberosity. The PTT may insert into the ossicle (Type II). In valgus injury, the ossicle may fracture, displacing the PTT, resulting in flatfoot deformity. May be symptomatic, generally presenting in middle-aged women with pain on the medial aspect of the foot. May be misdiagnosed as a navicular tuberosity avulsion fracture, which would present with tenderness and proximal migration of the fragment. Typically subdivided into three types:[2,3,6]

- **Type I** (30%): Considered a sesamoid, round or oval in shape (2-6 mm in diameter) and embedded within the distal PTT, separated from the navicular tuberosity for up to 5 mm
- **Type II** (50-60%): Also called a "prehallux", seen as a triangular or heart-shaped ossicle (9-15 mm in size) that serves as the insertion site for the PTT and connects with the navicular bone by a synchondrosis (1-2 mm wide). Most likely to become symptomatic or be misdiagnosed as a fracture.
- **Type III** (10-20%): Prominent tubercular process fully incorporated without a synchondrosis; known as cornuate or gorilloid navicular

Radiographic characteristics: Round, oval (Type I), triangular, heart-shaped (Type II) ossicle or fully fused tubercular process (Type III) adjacent to the navicular bone, best seen on AP radiographs of the foot.

*See Fig. 8 on page 16 for diagram and Fig. 19 on page 26 for cases

***See Table 1 on page 27 and Table 2 on page 28 for complete poster summary***
Fig. 1: 3D reconstructions of the hip in AP [a] and oblique [b] positions. Highlighted by red and yellow arrows are graphic representations of bilateral os acetabuli. Ossicles drawn by Dr. Alexandra Pérez Pérez.

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Fig. 2: 3D reconstructions of the knee in AP [a] and lateral [b] positions. Graphic representations of os cyamella [yellow], meniscal ossicle [light blue] and fabella [red] have been drawn, highlighting their typical locations. Ossicles drawn by Dr. Alexandra Pérez Pérez.

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**Fig. 3:** Frontal view of the pelvis demonstrating bilateral os acetabuli, seen in 3% of the population.

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Fig. 4: Unilateral fabella seen in lateral radiograph of the left leg, seen as a small, rounded, well-corticated ossicle on the posterior aspect of the knee. Best seen on lateral radiographs.

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Fig. 5: AP [a] and lateral [b] views of the right knee of a male patient with a unilateral cyamella. Best seen on AP view

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Fig. 7: T1W sagittal MR view of the left knee [a] demonstrating a meniscal ossicle seen within the posterior horn of the medial meniscus [yellow arrow]. Lateral plain film of the left knee [b] of the same patient with visible bony structure, representing meniscal ossicle.

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Fig. 8: Lateral [a] and AP [b] views of the left foot reviewing some common foot accessory ossicles: (1) os trigonum, (2) os vesalianum pedis, (3) os peroneum, (4) os subtibiale, (5) calcaneus secundarius, (6) os intermetatarseum, (7) os supratalare, (8) hallux sesamoids, (9) os supranaviculare, (10) os tibiale externum, (11) os subfibulare

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**Fig. 9:** Symptomatic os trigonum with associated edema seen in lateral MR images of foot, STIR [a] and T1W [b] sequences. Os trigonum seen at the posterior process of the talus in lateral radiograph of foot [c]. Present in approximately 7% of adults.

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Fig. 10: Right foot oblique [a] and DP [b] views of a 27-year-old male patient presenting with right foot pain. Os vesalianum (pedis) visualized as ossification next to the base of the fifth metatarsal bone.

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Fig. 11: Lateral [a] and AP [b] radiographs of the right foot with an os peroneum, seen in 26% of the population.

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Fig. 12: 3D oblique [a] and frontal [b] models of the left foot, depicting the typical location of the os subfibulare beneath the tip of the fibula. Ossicles drawn by Dr. Alexandra Pérez Pérez.

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Fig. 13: 3D oblique [a] and frontal [b] models of the left foot, depicting the typical location of the os subtibiale beneath the tip of the medial malleolus. Ossicles drawn by Dr. Alexandra Pérez Pérez.

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Fig. 14: 3D oblique [a] and lateral [b] models of the left foot, depicting the typical location of the os calcaneus secundarius, at the anteromedial border of the calcaneus, cuboid, talar head and tarsal navicular bones. Ossicles drawn by Dr. Alexandra Pérez Pérez.

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Fig. 15: Bilateral os intermetatarsaleum, seen freestanding in left [a] lateral foot radiograph and articulating in right [b] lateral foot radiograph. Most commonly located superiorly between the bases of the first and second metatarsals, with an incidence of approximately 4% in the general population.

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Fig. 16: 3D oblique [a] and lateral [b] models of the left foot, depicting the typical location of the os supratalare, at the dorsal aspect of the talar neck. Ossicles drawn by Dr. Alexandra Pérez Pérez.

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Fig. 17: AP view with bilateral, unipartite hallux sesamoids

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**Fig. 18:** Os supranaviculare [yellow arrow], seen in only 1-5% of people, and os trigonum [orange arrow] in a lateral radiograph of a male patient's right foot.

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Fig. 19: Os tibiale externum (accessory navicular or os naviculare accessorium). Oblique view of unilateral accessory navicular, type I [a], accounting for approximately 30% of cases. Different male patient with bilateral ossicles seen in DP view; type II [b], accounting for approximately 60% of cases, and type III [c], accounting for the remaining 10%.

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Table 1: Poster summary: hip and knee sections

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<table>
<thead>
<tr>
<th>Accessory Ossicle</th>
<th>Prevalence</th>
<th>Location</th>
<th>Radiographic Appearance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Os trigonum</td>
<td>7-25%</td>
<td>Posterolateral to the talus.</td>
<td>Usually triangular in shape (may be rounded or oval), with well-corticated and sclerotic borders. It is best seen in lateral or mortise radiographs of the foot and ankle.</td>
</tr>
<tr>
<td>Os vesalianum pedis</td>
<td>0.1-5.9%</td>
<td>Adjacent to the base of the fifth metatarsal, embedded within the PBT.</td>
<td>Discrete, separate, well-corticated bony structure that articulates with the base of a well-developed fifth metatarsal and the cuboid bone. Best seen in lateral oblique radiographs.</td>
</tr>
<tr>
<td>Os peroneum</td>
<td>26% in ossified form</td>
<td>Embedded within the PLT, in the region of the cuboid canal, at the level of the calcaneocuboid joint.</td>
<td>Round or oval-shaped ossicle, seen as a separate, corticated structure. Best seen in lateral or oblique views. Fractures might suggest tendon rupture.</td>
</tr>
<tr>
<td>Os subfibulare</td>
<td>0.2-2.1%</td>
<td>Posterior to the tip of the lateral malleolus.</td>
<td>Round to elongated shape seen as a separate, corticated structure. Can appear anterior to the lateral malleolus. Best seen with mortise and AP views.</td>
</tr>
<tr>
<td>Os subtibiale</td>
<td>0.2-1.2%</td>
<td>Below the tip of the medial malleolus, between the medial malleolus and the talus.</td>
<td>Round with smooth margins. Varies in size. No appreciable defect of the medial malleolus should be visualized.</td>
</tr>
<tr>
<td>Os calcaneus secundarius</td>
<td>0.6-7%</td>
<td>At the anteromedial border of the calcaneus, the cuboid, the talar head and the tarsal navicular.</td>
<td>Typically triangular in shape, ranging between 3-4mm and best visualized in oblique views of the foot. MRI for differentiation of fractures.</td>
</tr>
<tr>
<td>Os intermetatarsale</td>
<td>0.1-6.8%</td>
<td>Usually found dorsally between the bases of the first and second metatarsals.</td>
<td>Appears as round, spindle-shaped, oval or kidney-shaped. Best visualized on AP foot radiographs.</td>
</tr>
<tr>
<td>Os supratalare</td>
<td>0.2-0.9%</td>
<td>Dorsal aspect of the talar neck.</td>
<td>Small, oval or spindle-shaped oriented transversally with a radiolucent gap over the dorsum of the talar neck. Best seen in lateral foot and ankle radiographs.</td>
</tr>
<tr>
<td>Hallux (and lesser metatarsal sesamoids)</td>
<td>Always present on first metatarsal bone. 0.2-4.3% in lesser metatarsals.</td>
<td>At the level of the first metatarsal head, within the medial and lateral slips of the flexor hallucis brevis tendon.</td>
<td>Well-corticated structure that varies in size and shape. When bipartite, the ossicle shows two well-corticated fragments with an irregular line of articulation.</td>
</tr>
<tr>
<td>Os supranaviculare</td>
<td>1-3.5%</td>
<td>More common in individuals with foot deformities.</td>
<td>On the dorsal margin of the talonavicular joint space.</td>
</tr>
<tr>
<td>Os tibiale externum</td>
<td>4-28.3%</td>
<td>Postero medial aspect of the foot, adjacent to the postero medial tuberosity of the navicular bone within the dorsal tibial tendon.</td>
<td>Type I: round, oval. Type II: triangular, heart-shaped. Type III: ossicle or fully fused tubercular process. Best seen on AP radiographs of the foot.</td>
</tr>
</tbody>
</table>

**Table 2**: Poster summary: ossicles of the foot section

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Fig. 6: MRI [a] and lateral plain film [b] of the right knee of a different patient, demonstrating a unilateral cyamella, seen with low signal intensity borders on MRI. Note the location at the popliteus myotendinous junction.

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Conclusion

Accessory ossicles are secondary ossification centers separate from adjacent bone that may be clinically insignificant anatomical variants and vary in prevalence depending on the area of the body in which they are found. Familiarization with the most commonly encountered accessory ossicles in the hip and lower extremities is key in distinguishing an incidental, clinically insignificant, osseous structure from a more sinister misdiagnosis, which could entail unnecessary workup.
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References


