13 y/o female with medial right foot and ankle pain

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Coronal T2 weighted (left) and T1 weighted (right) images ankle show marrow edema (blue arrows) centered around the physis (red arrow) of the fibula. Note normal marrow signal on T1 weighted sequence. Early stages of normal physeal closure are seen on the right (white arrow).

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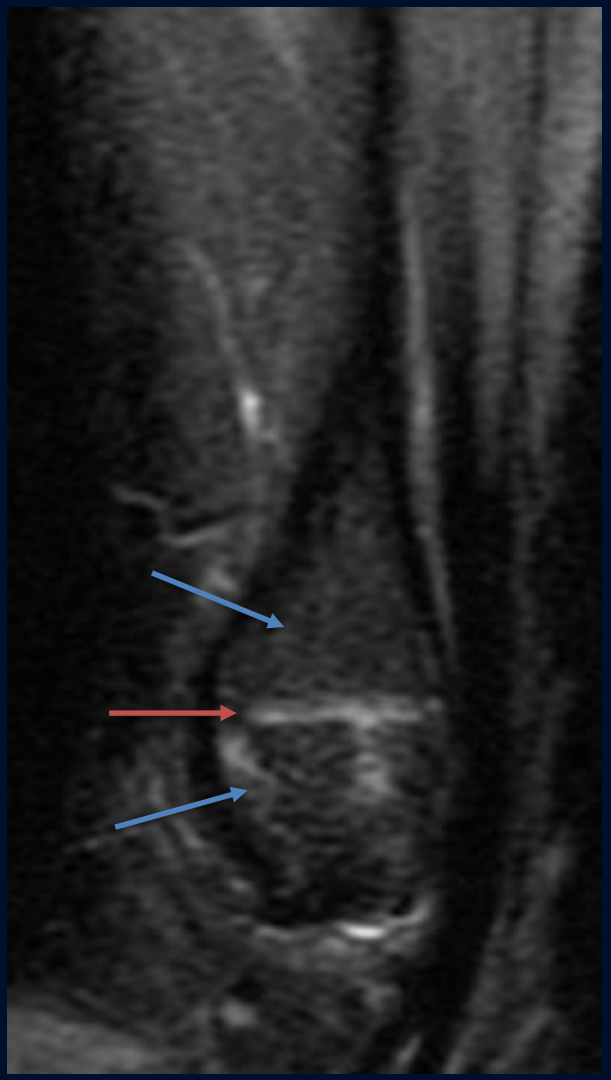

Sagittal T1 (left) and T2 (right) again show edema of the fibula (blue arrows) centered around the physis (red arrow) on T2 weighted sequence. Normal marrow signal is seen on T1. Central physeal closure (white arrow) on T1 image is also present.

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Focal periphyseal edema (FOPE zone)

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Focal periphyseal edema

- Uncertain origin, but the areas of edema are thought to be related to normal physiologic physeal closure.
- Physeal closure generally occurs in a centrifugal pattern, central to peripheral
- New cartilage is added to the epiphyseal border of the physis which is then subsequently mineralized and forms a union with the diaphysis
- These cartilage bridges are thought to act as tethers and alter local mechanics
  - Decreases flexibility, increased susceptibility to stress in the form of localized microtrauma.

Focal periphyseal edema

- FOPE zones are generally seen in adolescents around the time of skeletal maturity during early physeal closure
- If no additional findings are present, FOPE zones may be the source of pain
- Of note, this patient was found to have type II os naviculare syndrome which was causing her medial ankle/foot pain

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References

1. Nicholas Beckmann and Susanna Spence, “Unusual Presentations of Focal Periphyseal Edema Zones: A Report of Bilateral Symmetric Presentation and Partial Physeal Closure,” Case Reports in Radiology, vol. 2015, Article ID 465018, 8 pages, 2015. https://doi.org/10.1155/2015/465018.
2. Zbojniewicz, Andrew M., and Tal Laor. “Focal Periphyseal Edema (FOPE) Zone on MRI of the Adolescent Knee: A Potentially Painful Manifestation of Physiologic Physeal Fusion?” *American Journal of Roentgenology*, vol. 197, no. 4, 2011, pp. 998–1004., doi:10.2214/ajr.10.6243.