

1 [Heading] MUSCULOSKELETAL IMAGING

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3 Radiographically Occult Medial Cuneiform Impaction Fracture

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12 A 25-year-old woman reported to the emergency department with right medial

13 midfoot pain after kicking a wall, inducing a first-ray axial/plantar flexion compressive

14 force. The patient was unable to weight bear immediately after the injury. Erythema and

15 edema ~~was~~ were present at the medial midfoot. Radiographs were noncontributory

16 (**FIGURE 1**, available at www.jospt.org). The patient was diagnosed with a metatarsal

17 contusion and was instructed to use ice ~~and~~, ibuprofen~~,~~ and to weight bear as tolerated

18 on crutches.

19 The patient returned to full weight bearing 3 days later~~;~~; however, persistent pain

20 3.5 weeks post injury led her to seek a direct-access physical therapy evaluation. Her

21 pain was exacerbated with the first steps when getting out of bed and by walking

22 barefoot. The examination revealed mild ecchymosis at the medial and plantar midfoot.

23 During gait, the patient ~~was noted to bore~~ weight bear along the lateral foot to avoid

24 pronation in stance and experienced 3/10 to 4/10 pain. The medial cuneiform was

25 tender to palpation. Due to concern for a medial cuneiform fracture or a medial midfoot

26 sprain, the physical therapist requested magnetic resonance imaging, which confirmed

27 a medial cuneiform fracture (**FIGURE 2; FIGURE 3**, available at www.jospt.org).

28 The patient utilized a cam boot for 2 weeks; transitioned to a flat, hard-soled

29 shoe at 5 weeks post injury~~;~~; and footwear restrictions were removed 6 weeks post

30 injury. The patient returned to running and lunges with only mild discomfort 12 weeks
31 post injury.

32 Isolated medial cuneiform fractures are commonly missed at baseline evaluation
33 and are typically occult in initial radiographs.² Definitive diagnosis usually occurs after
34 continued symptoms prompt advanced diagnostic imaging. Conservative management
35 is commonly sufficient to restore prior function.¹ *J Orthop Sports Phys Ther*
36 *2019;49(9):xxx. doi:10.2519/jospt.2019.8778*

37 REFERENCES

- 38 1. Babu NS, Gambardella GV, Bowlby MA. Isolated fracture of the medial
39 cuneiform: a case report. *J Am Podiatr Med Assoc.* 2017;107:436-439.
40 <https://doi.org/10.7547/16-013>
- 41 2. Eraslan A, Ozyurek S, Erol B, Ercan E. Isolated medial cuneiform fracture: a
42 commonly missed fracture. *BMJ Case Rep.* 2013;2013:bcr2013010093.
43 <https://doi.org/10.1136/bcr-2013-010093>

44 [\[online\]](#)

45 **FIGURE 1.** (A) Anterior-to-posterior, (B) oblique, and (C) lateral radiographs of the right
46 foot, taken on the day of the injury, demonstrating no signs of fracture.

47 **FIGURE 2.** (A) Long-axis, axial, T2-weighted right-foot magnetic resonance image
48 demonstrating cortical irregularity (arrow). (B) Sagittal, T1-weighted right-foot magnetic
49 resonance image demonstrating signal hypointensity (arrow). (C) Sagittal, short-tau
50 inversion recovery, weighted right-foot magnetic resonance image demonstrating signal
51 hyperintensity (arrow) of the medial cuneiform without involvement of the plantar
52 metatarsal ligaments, consistent with an isolated medial cuneiform impaction fracture.

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55 **FIGURE 3.** [scrollable MRI]