

1 [Heading] MUSCULOSKELETAL IMAGING

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3 Radiographically Occult Medial Cuneiform Impaction Fracture

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5 Lance M. Mabry, PT, DPT, Department of Physical Therapy, High Point University, High
6 Point, NC.

7 Taylor N. Patti, Physical Therapy Doctoral Program, High Point University, High Point,
8 NC.

9 Chris M. Bleakley, PT, PhD, Department of Physical Therapy, High Point University,
10 High Point, NC.

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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]