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Figure 1. Medial malleolus fracture with widening of the anterior syndesmosis and medial clear space.^{3,4}



Figure 2. Proximal fibular spiral fracture.

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A 40-year-old woman presented to the emergency department (ED), complaining of severe left ankle pain. She stated that just before arrival, she twisted her ankle and then fell to the ground. She had no medical history and had no previous injuries to the affected ankle. On physical examination, she had a significant amount of swelling around her ankle. She had tenderness to palpation over her medial malleolus (Figure 1), as well as her proximal fibula (Figure 2). Radiographs were performed in the ED. (Figures 1-3).



Figure 3. Status post–open reduction and internal fixation. Used with permission of Anna L. Waterbrook, MD, Department of Emergency Medicine, University of Arizona, Tucson, AZ.

For the diagnosis and teaching points, see page 134.

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REFERENCES

1. Broder J, Fordham LA, Warshauer DM. Increasing utilization of computed tomography in the pediatric emergency department, 2000-2006. *Emerg Radiol.* 2007;14:227-232.
2. Broder J, Warshauer DM. Increasing utilization of computed tomography in the adult emergency department, 2000-2005. *Emerg Radiol.* 2006;13:25-30.
3. Brenner DJ, Hall EJ. Computed tomography: an increasing source of radiation exposure. *N Engl J Med.* 2007;357:2277-2284.
4. Tsapaki V, Aldrich JE, Sharma R, et al. Dose reduction in CT while maintaining diagnostic confidence: diagnostic reference levels at routine head, chest, and abdominal CT—IAEA-coordinated research project. *Radiology.* 2006;240:828-834.
5. Gupta AK, Nelson RC, Johnson GA, et al. Optimization of eight-element multi-detector row helical CT technology for evaluation of the abdomen. *Radiology.* 2003;227:739-745.
6. Fefferman NR, Roche KJ, Pinkney LP, et al. Suspected appendicitis in children: focused CT technique for evaluation. *Radiology.* 2001;220:691-695.
7. Gamanagatti S, Vashisht S, Kapoor A, et al. Comparison of graded compression ultrasonography and unenhanced spiral computed tomography in the diagnosis of acute appendicitis. *Singapore Med J.* 2007;48:80-87.
8. Rao PM, Rhea JT, Novelline RA, et al. Helical CT technique for the diagnosis of appendicitis: prospective evaluation of a focused appendix CT examination. *Radiology.* 1997;202:139-144.
9. van der Molen AJ, Geleijns J. Overranging in multisection CT: quantification and relative contribution to dose—comparison of four 16-section CT scanners. *Radiology.* 2007;242:208-216.
10. McCollough CH. CT dose: how to measure, how to reduce. *Health Phys.* 2008;95:508-517.
11. Eypasch E, Lefering R, Kum CK, et al. Probability of adverse events that have not yet occurred: a statistical reminder. *BMJ.* 1995;311:619-620.

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DIAGNOSIS:

Maisonneuve Fracture. This fracture is an unstable ankle injury that consists of a proximal fibula fracture with an associated injury to the medial malleolus, deltoid ligament, or tibiofibular syndesmosis.¹ It is caused by eversion of the ankle. As the talus everts, it places stress on the medial portion of the ankle and affects the fibula transmitting forces through the interosseous membrane to the proximal fibula.¹ When there is injury to the medial malleolus, the proximal fibula should also always be evaluated because patients may not initially complain of pain in this area.² These unstable ankle injuries usually require open reduction and internal fixation.

REFERENCES

1. Sproule JA, Khalid M, O'Sullivan M, et al. Outcome after surgery for Maisonneuve fracture of the fibula. *Injury.* 2004;35:791-798.
2. Kane SF. Ankle fractures. In: Seidenberg PH, Beutler AI, eds. *The Sports Medicine Resource Manual.* Philadelphia, PA: Saunders Elsevier; 2008:364-365.
3. Duke Orthopaedics. Ankle Frx: medial clear space vs lateral talar shift [Wheless' Textbook of Orthopaedics Web site]. Available at: http://www.whelessonline.com/ortho/ankle_frx_medial_clear_space_vs_lateral_talar_shift. Accessed July 18, 2009.
4. Duke Orthopaedics. Objective diagnosis of syndesmotom injury [Wheless' Textbook of Orthopaedics Web site]. Available at: http://www.whelessonline.com/ortho/objective_diagnosis_of_syndesmotom_injury. Accessed July 18, 2009.