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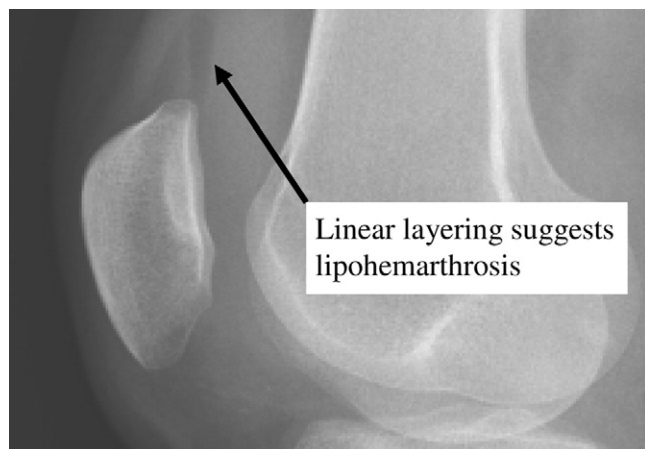


Figure 1. Lateral radiograph of the knee revealing an effusion that contains a linear interface between 2 soft tissue densities.

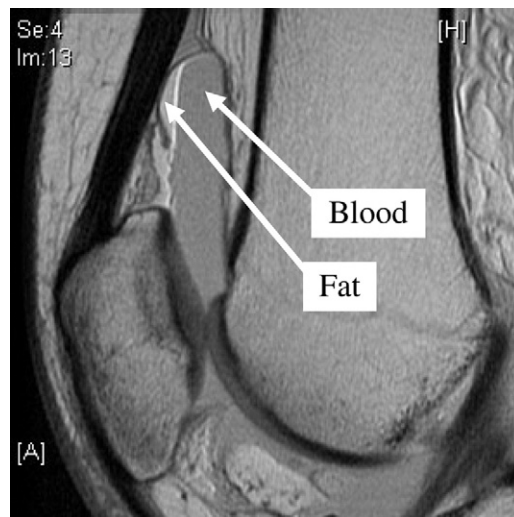


Figure 2. Lateral MRI of the knee revealing in greater detail the linear interface between 2 soft tissue densities, suggestive of lipohemarthrosis. Used with permission of Daniel J. Pallin, MD, MPH, Department of Emergency Medicine, Brigham and Women's Hospital, the Division of Emergency Medicine, Children's Hospital Boston, and the Division of Emergency Medicine, Harvard Medical School, Boston, MA.

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Missed fracture is a major cause of dissatisfaction, litigation, and sometimes morbidity. A knee radiograph that reveals effusion but no fracture usually indicates only soft-tissue injury. **Figures 1 and 2** show the knee of a 22-year-old woman who fell onto her flexed knee while ice skating. Plain radiographs revealed normal-appearing bones and an effusion. The patient was discharged, but a second radiologist reread the film and found an abnormality. The patient was contacted and asked to return for a magnetic resonance imaging (MRI) study, which revealed a fracture of the patella.

For the diagnosis and teaching points, see page 135.

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4. Auble TE, Hsieh M, Gardner W, et al. A prediction rule to identify low risk patients with heart failure. *Acad Emerg Med.* 2005;12:514-521.
5. Chin M, Goldman L. Correlates of major complications or death in patients admitted to the hospital with congestive heart failure. *Arch Intern Med.* 1996;156:1814-1820.
6. Fonarow GC, Adams Jr KF, Abraham WT, et al. Risk stratification for in-hospital mortality in acutely decompensated heart failure. Classification and regression tree analysis. *JAMA.* 2005;293:572-580.
7. Lee DS, Austin PC, Rouleau JL, et al. Predicting mortality among patients hospitalized for heart failure: derivation and validation of a clinical model. *JAMA.* 2003;290:2581-2587.
8. Meehan TP, Fine MJ, Krumholz HM, et al. Quality of care, process, and outcomes in elderly patients with pneumonia. *JAMA.* 1997;278:2080-2084.
9. Houck PM, Bratzler DW, Nsa W, et al. Timing of antibiotic administration and outcomes for Medicare patients hospitalized with community-acquired pneumonia. *Arch Intern Med.* 2004;164:637-644.
10. US Department of Public Health and Human Services. *International Classification of Diseases, Ninth Revision, Clinical modification (ICD-9-CM)*. Bethesda, MD: US Department of Public Health and Human Services; 1989.
11. Polanczyk CA, Rohde LE, Philbin EA, et al. A new casemix adjustment index for hospital mortality among patients with congestive heart failure. *Med Care.* 1998;36:1489-1499.
12. Graff L, Orledge J, Radford M, et al. Correlation of the Agency for Health Care Policy and Research congestive heart failure admission guideline with mortality: peer review organization voluntary hospital association initiative to decrease events (PROVIDE) for congestive heart failure. *Ann Emerg Med.* 1999;34:429-437.
13. Collins SP, Lindsell CJ, Storrow AB, et al. Prevalence of negative chest radiography results in the emergency department patient with decompensated heart failure. *Ann Emerg Med.* 2006;47:13-18.
14. StataCorp LP. *Stata/SE 9.2 for Windows*. College Station, TX: StataCorp; 2006.
15. SPSS Inc. *SPSS Statistical Software: Release 14.0*. Chicago, IL: SPSS; 2005.
16. Hanley JA, McNeil BJ. A method for comparing the areas under receiver operating characteristic curves derived from the same cases. *Radiology.* 1983;148:839-843.
17. Fine MJ, Auble TE, Yealy DM, et al. A prediction rule to identify low-risk patients with community-acquired pneumonia. *N Engl J Med.* 1997;336:243-250.
18. Reilly BM, Evans AT, Schaidler JJ, et al. Impact of a clinical decision rule on hospital triage of patients with suspected acute cardiac ischemia in the emergency department. *JAMA.* 2002;288:342-350.
19. Brehaut JC, Stiell IG, Visentin L, et al. Clinical decision rules "in the real world": how a widely disseminated rule is used in everyday practice. *Acad Emerg Med.* 2005;12:948-957.

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DIAGNOSIS:

Lipohemarthrosis. The first image is a lateral plain radiograph, with a linear interface between 2 soft-tissue densities, just superior to the posterior aspect of the patella. This linear interface indicates lipohemarthrosis, resulting from entry of marrow fat into the joint cavity. Lipohemarthrosis can also be detected when fat globules are observed on needle aspiration of a hemarthrosis. The second image is a sagittal MRI that shows the interface in greater detail, with blood products posterior and fat anterior. (The fracture is not shown in these images.) Emergency physicians should be vigilant for lipohemarthrosis on radiographs of traumatized joints, just as they are vigilant for the fat pad sign on radiographs of traumatized elbows. While the fat pad sign indicates displacement of a fat pad by an effusion, lipohemarthrosis indicates release of fat into the joint cavity, ie, an effusion composed of both blood and fat.

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