



## Visual Case Discussion

## Transverse displaced patellar fracture

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## ARTICLE INFO

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A 42 year-old female presented to the Emergency Department after a fall from standing while at social event. The patient reported she had several alcoholic beverages, sustained a mechanical fall and landed directly on the anterior portion of her right knee. She denied any other injuries or loss of consciousness, noting immediate severe knee pain and significantly decreased range of motion. In the Emergency

Department she had appropriate vital signs and was alert and oriented. Physical exam demonstrated an obvious deformity with a palpable anterior knee defect, no other significant injuries were identified. Transverse plain films of the knee confirmed a displaced, transverse patellar fracture without any other signs of acute fracture or dislocation.<sup>1,2</sup> Orthopedic surgery was consulted, the patient was placed in a knee immobilizer and schedule for open reduction and internal fixation as an outpatient (Figs. 1 and 2).<sup>3</sup>



Fig. 1. Plain film image of patellar fracture.



Fig. 2. External exam of a displaced transverse patellar fracture.

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## Appendix A. Supporting information

Supplementary data associated with this article can be found in the online version at [doi:10.1016/j.visj.2017.07.013](https://doi.org/10.1016/j.visj.2017.07.013).

### References

1. Knutson Tristan, et al. Evaluation and management of traumatic knee injuries in the emergency department. *Emerg Med Clin N Am.* 2015;33(2):345–362.
2. Wheeless, Clifford R Fractures of the Patella. *Wheeless' Textbook of Orthopaedics.* Wheeless Online, 10 June 2016. Web. ([http://www.wheelessonline.com/ortho/fractures\\_of\\_the\\_patella](http://www.wheelessonline.com/ortho/fractures_of_the_patella)).
3. Filho , Sayum Jorge, et al. Interventions for treating fractures of the patella in adults. *Cochrane Database Syst Rev.* 2015.

### Questions

1. Which of these is NOT an indication for surgical repair of a patellar fracture?
  - a. Open fracture of joint
  - b. Displaced fracture
  - c. Multiple fractures of knee joint
  - d. Loss of extensor mechanism of knee
2. True or False? A computed tomography may be needed to detect retroperitoneal free air.
  - a. Weight bearing on affected knee
  - b. Extension of knee
  - c. Flexion of knee

- d. Extension of hip
- e. Flexion of hip

### Answers

1. Multiple fractures of knee joint. Explanation: Most patellar fractures can be managed conservatively without operative management, even if the injury is not isolated to the patella. Any open fracture requires surgical management to improve recovery and reduce infection risk. Displaced fractures where the pieces of the patella are not well approximated, as well as those where knee extensor function is compromised, are better managed operatively. In cases where multiple fractures of the knee joint are present, the nature of the fractures will dictate whether the injury will require operative repair. The presence of the multiple fractures, by itself, is not an indication for surgery. Reference: Wheeless, Clifford R. "Fractures of the Patella." *Wheeless' Textbook of Orthopaedics.* Wheeless Online, 10 June 2016. Web. [http://www.wheelessonline.com/ortho/fractures\\_of\\_the\\_patella](http://www.wheelessonline.com/ortho/fractures_of_the_patella).
2. Extension of knee. Explanation: The extensor musculature of the upper leg transmits force to the lower leg via the patella, as the patella is connected superiorly to the quadriceps and inferiorly to the patellar tendon and tibia. In the case of a displaced patellar fracture, there is no communication between the quadriceps and the lower leg, and extension is impaired. Reference: Knutson, Tristan, et al. "Evaluation and Management of Traumatic Knee Injuries in the Emergency Department." *Emergency Medicine Clinics of North America*, vol. 33, no. 2, 2015, pp. 345–362.