



# A Knee-to-Knee Collision



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## Pippen's case

Pippen, 29, presents to the ED with a gross right knee disfigurement (Figures 1 and 2) and associated pain due to a knee-to-knee collision during a soccer game 4 hours earlier.

His pain is sharp, persistent and is non-radiating, localized to the anterior knee.

### Examination

On exam, Pippen's knee is grossly deformed and his patella is laterally displaced with mild associated swelling.

There is no bony tenderness and only mild tenderness on medial and lateral palpation.

Passive movement is limited and painful; he has limited knee extension but full active knee extension.

X-rays do not show any evidence of osteochondral or chondral fragments (Figures 3, 4 and 5).

### Questions

1. What is the diagnosis?
2. How is it managed?
3. What are the associated complications?
4. What can Pippen expect after leaving the hospital?

**Read on for the answers...**

*This department covers selected points to avoid pitfalls and improve patient care by FPs in the ED. Feedback can be sent to [diagnosis@sta.ca](mailto:diagnosis@sta.ca).*

## Questions & Answers

### 1. What is the diagnosis?

This is a lateral patellar dislocation. Patellar dislocation can be:

- Lateral
- Medial
- Superior
- Inferior
- Intercondylar

Lateral dislocations are the most prevalent. These injuries are most often due to direct trauma to the patella or external rotation of the tibia with contraction of the quadriceps causing the patella to slip out of the trochlear groove. The term "subluxation" refers to a partial dislocation of the patellar joint; in this case, the patella is confined by the neighbouring ligaments with minor displacement.

Patients often have predisposing factors to patellar dislocation, such as muscular hypoplasia and ligament weakness. The most consistent feature associated with patellar instability is patella alta; defined as a form of quadriceps dysplasia evidenced by a shortening of the quadriceps muscle-tendon complex. Lateral patella dislocation is often associated with injury to the medial patellofemoral ligament. Other, less frequent associated injuries include:

- Osteochondral fractures
- Patellar fractures
- Medial collateral ligament sprain
- Meniscal injury
- Anterior cruciate ligament injury

First-time patella dislocations occur in 6:100,000 patients with the highest frequency in adolescent girls and athletes. X-rays should be performed to rule out osteochondral or chondral fragments; MRI or arthroscopy may be performed when there is an uncertainty to the degree of damage or if a ligament tear is suspected. In situations where patellar dislocation is not evident, consider patellofemoral arthritis, chondromalacia, soft tissue and capsular injury, osteochondritis dissecans and bipartite patella.



Figure 1. Clinical appearance of Pippen's knee on presentation to the ED.



Figure 2. Additional clinical view of Pippen's knee.



Figure 3. Anteroposterior radiograph of Pippen's knee demonstrating an obvious patellar dislocation. There is no associated fractures seen.

## 2. *How is it managed?*

A simple lateral patellar dislocation with no other associated injury is reduced conservatively. Conservative reduction does not require sedation unless the patient experiences severe pain or anxiety. The knee joint is held in full extension with the thigh held in slight flexion at the hip joint to reduce tension on the quadriceps muscles. Force is applied to the lateral edge patella in an anteromedial direction to lift the patella over the femoral condyle. Reduction of a medial patellar dislocation requires applying force in an anterolateral direction.

Surgery is not recommended as initial treatment unless a displaced osteochondral fracture or asymmetric reduction of the dislocated patella is noted; arthroscopy is recommended to investigate these cases. Superior and intercondylar dislocations should be examined with an orthopedic surgeon. Conservative management is contraindicated in the presence of a posterolateral knee dislocation. Further caution should be taken to rule out traumatic hemarthrosis of the knee. An x-ray should be performed after the reduction to insure proper reduction and to rule out any osteochondral fractures.

## 3. *What are the associated complications?*

In the long-term, patients are at an increased risk for redislocation and patellofemoral osteoarthritis. Redislocation is a common complication occurring in 15% to 44% of patients following a primary dislocation with most findings reporting higher rates in women (2:1); operation was required in half of the redislocations. Patellar redislocation occurs in up to 27% of those surgically-treated for primary patellar dislocation. Patellar dislocation is the only frequent complication; other infrequent complications to primary patellar dislocation include degenerative arthritis and osteochondral fracture. Educating the patient about the injury and providing a rehabilitation regiment can




Figure 4. Lateral view of Pippen's knee.



Figure 5. Radiographs of Pippen's knee post-reduction. Successful closed reduction of his patellar dislocation is demonstrated.

decrease the incidence of complications secondary to the patellar dislocation.

### 4. *What can Pippen expect after leaving the hospital?*

Patients should expect anterior knee pain most evident on flexion of the knee joint; persistent pain should be reassessed for ligament tear and chondral or osteochondral fractures. Rehabilitation is case-dependent and may consist of immobilization of the knee in extension for two to three weeks. Pending on the degree of dislocation, full muscle strength and range of motion can be achieved in two to six months. More than half of patients continue to have limitations in strenuous activity. Limitations are most frequent in kneeling and squatting activities. Physiotherapy is recommended to guide patients in establishing full muscle strength and full range of motion while reducing the chance of reinjury. 

#### Resources

1. Arendt EA: Current Concepts of Lateral Patella Dislocation. *Clin Sports Med* 2002; 21(3):499-519.
2. Geary M: Management of First-Time Patellar Dislocations. *Orthopedics* 2004; 27(10):1058-62.
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6. Cofield RH, Bryan RS: Acute Dislocation of the Patella: Results of Conservative Treatment. *J Trauma* 1977; 17(7):526-31.

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