

- and management of facial palsy: 2000 patients at a facial nerve center. *Laryngoscope* 2014; 124:E283-93.
2. Sataloff, R. T. & Selber, J. C. Phylogeny and embryology of the facial nerve and related structures. Part II: embryology. *Ear Nose Throat J* 2003;82(10): 764-6, 769-72, 774.
  3. May, M. & Klein, S. R. Differential diagnosis of facial nerve palsy. *Otolaryngologic Clinics of Nor Am* 1991, vol. 24, no. 3, pp. 613-45.
  4. Finsterer, J. Management of peripheral facial nerve palsy. *Eur Arch Otorhinolaryngol* 2008; 265:743-52.
  5. Doshi, J. & Irving, R. Recurrent facial nerve palsy: the role of surgery. *J Laryngol Otol* 2010; 124(10): 1202-4.
  6. House, J. W. & Brackmann, D. E. Facial nerve grading system. *Otolaryngol Head Neck Surg*.1985; 93:146-7.
  7. Gilden, D. H. Clinical practice. Bell's Palsy. *N Engl J Med* 2004; 351(13): 1323-31.
  8. Axelsson, S., Berg, T. & Jonsson, L. Prednisolone in Bell's Palsy related to treatment start and age. *Otol Neurotol* 2011; 32:141-6.
  9. Siddiq, M. A., Hanu-Cenat, L. M. & Irving, R. M. Facial palsy secondary to cholesteatoma: analysis of outcome following surgery. *J Laryngol Otol* 2007; 121(2): 114-7.
  10. Alaani, A., Hogg, R., Saravanappa, N. & Irving, R. M. An analysis of the diagnostic delay in unilateral facial palsy. *J Laryngol Otol* 2005; 119(3): 184-8.
  11. Johnson, F., Semaan, M. T. & Megerian, C. A. Temporal bone fracture: evaluation and management in the modern era. *Otolaryngol Clin N Am* 2008; 41: 597-618.
  12. Moore, P. L., Selby, G. & Irving, R. M. Gunshot injuries to the temporal bone. *J Laryngol Otol* 2003; 117(1): 71-4.
  13. Salib, R. J., Tziambazis, E., McDermott, A.L., Chavda, S. V. & Irving, R. M. The crucial role of imaging in detection of facial nerve haemangiomas. *J Laryngol Otol* 2001; 115(6): 510-3.

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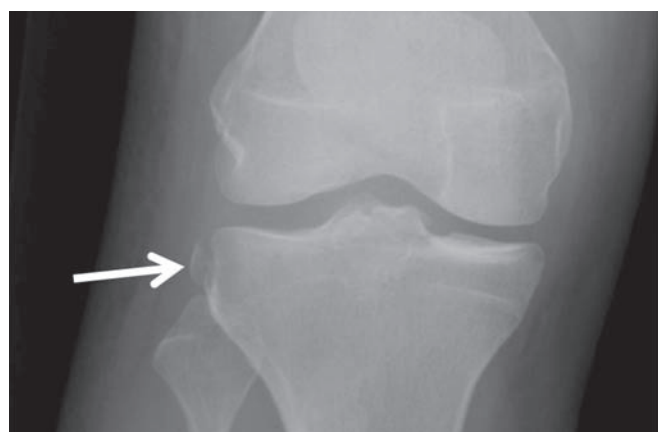
## Skiing Knee Injury: The relevance of subtle radiographic findings

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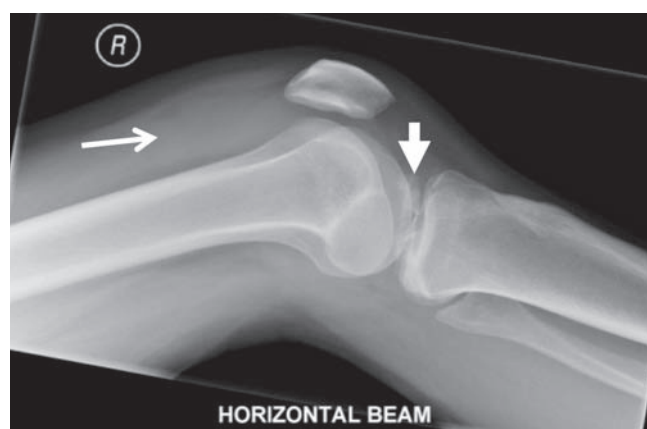
### CLINICAL PRESENTATION

A 24 year old lady sustained a knee injury whilst skiing and underwent plain knee radiographs. Subtle features were identified on the knee radiograph which warranted further imaging with MRI.

### IMAGES



**Figure 1a:** AP knee radiograph shows subtle avulsion fracture from the lateral margin of the lateral tibial plateau, termed a Second fracture (arrow)



**Figure 1b:** Lateral knee radiograph shows an intra-articular bone fragment (short arrow) and moderate joint effusion (arrow)



**Figure 2a:** Sagittal MR knee shows avulsion of the anterior cruciate ligament from the tibial plateau; the intra-articular bone fragment seen on the radiograph is identified here as the avulsed bone (short arrow) connected to the ACL (arrow)



**Figure 2b:** Coronal MR knee shows the bone avulsion from the lateral margin of the lateral tibial plateau indicating a Second fracture

## DIAGNOSIS

Second Fracture and avulsion of the anterior cruciate ligament from the tibial plateau.

## RADIOGRAPHIC FEATURES

Avulsion fracture from the lateral margin of the lateral tibial plateau indicating a Second Fracture; also referred to as the Lateral Capsular Sign.

Avulsion of the tibial spine indicating ACL avulsion injury.

## SECOND FRACTURE

The Second fracture was initially described by a French surgeon Paul Second in 1879. Anatomically it indicates cortical avulsion of the lateral capsular ligament of the knee. The mechanism of this injury involves internal rotation of the knee with varus stress. The importance of this injury which warrants further imaging with MRI is the high incidence of associated anterior cruciate ligament injury and meniscal tears. It is also possible to sustain a reverse Second fracture, which as its name implies, comprises an avulsion of the medial margin of the medial tibial plateau and is associated with injury to the posterior cruciate ligament and medial meniscal tears.

It is slightly unusual in this case that there is avulsion of the ACL rather than a midsubstance tear of the ACL which is a more common occurrence with Second fractures. ACL

avulsion injuries are generally more common in children than adults and tend to occur via different mechanisms in these groups, with a hyperextension mechanism proposed in adults. Radiographically, they appear as a tiny bony fragment within the intercondylar notch with some irregularity of the tibial plateau donor site.

In summary this case highlights the importance of identifying subtle bone avulsion injuries on radiographs of the knee following trauma, and the importance of performing further MRI imaging to identify underlying ligamentous or meniscal injury.

## REFERENCES

Gottsegen, C. J., Eyer, B. A., White, E. A., Leach, T. J., Forrester, D. Avulsion Fractures of the Knee: Imaging findings and clinical significance. *Radiographics* 2008; 28 (6): 1755-1770

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