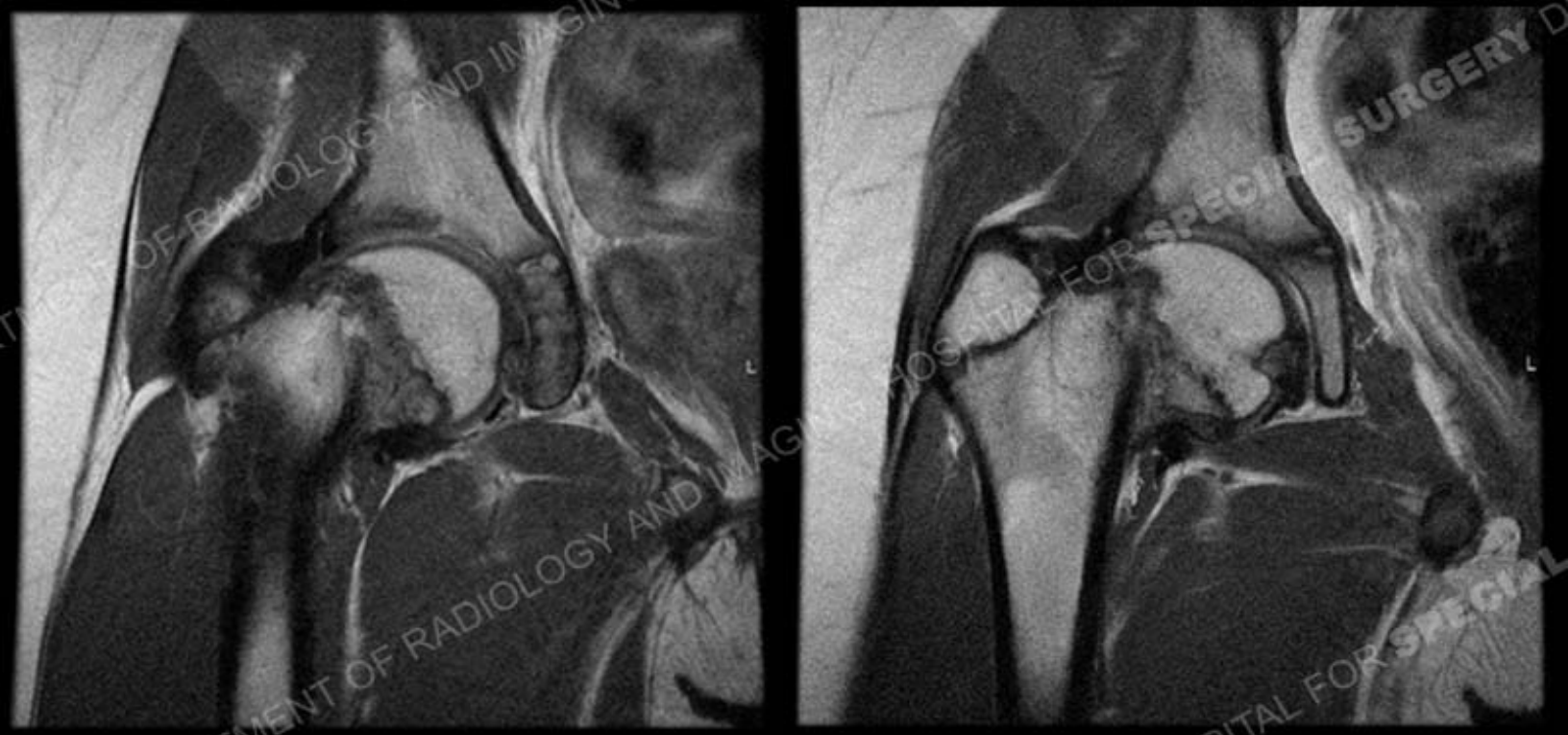
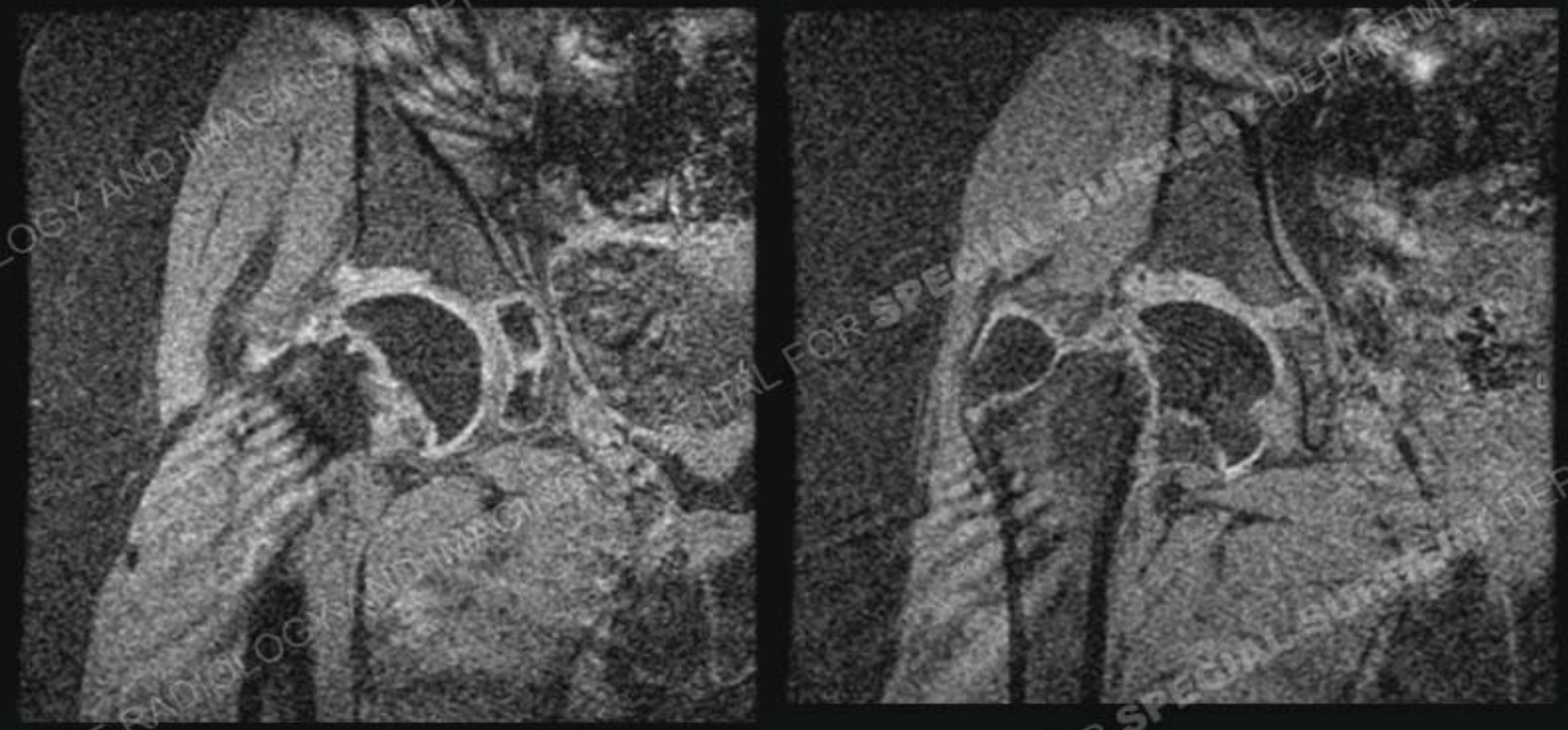
History: 8 year old girl with history of limping.


Magnified AP view of the right hip

Coronal IR image of both hips



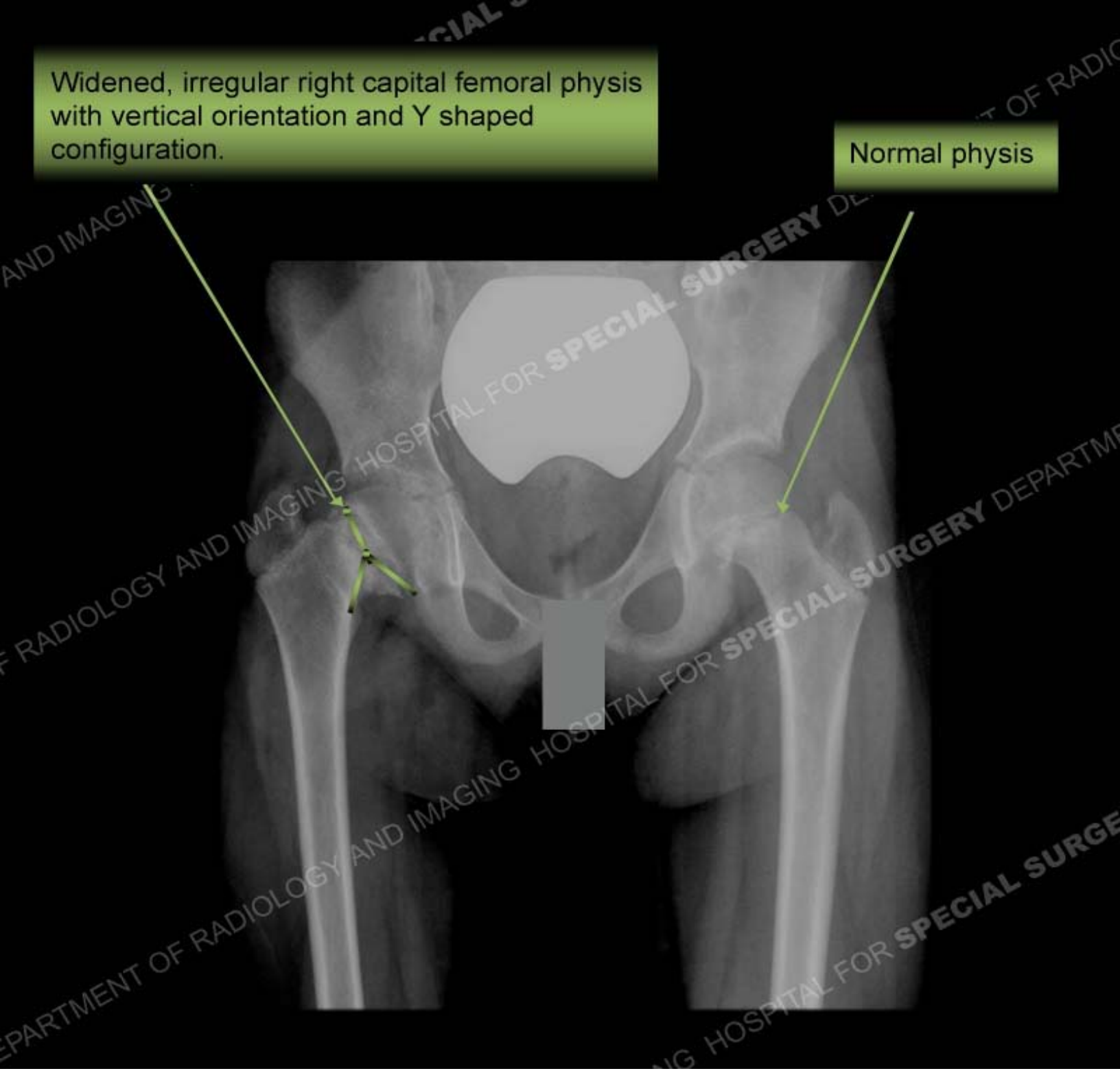
Coronal PD images through the right hip



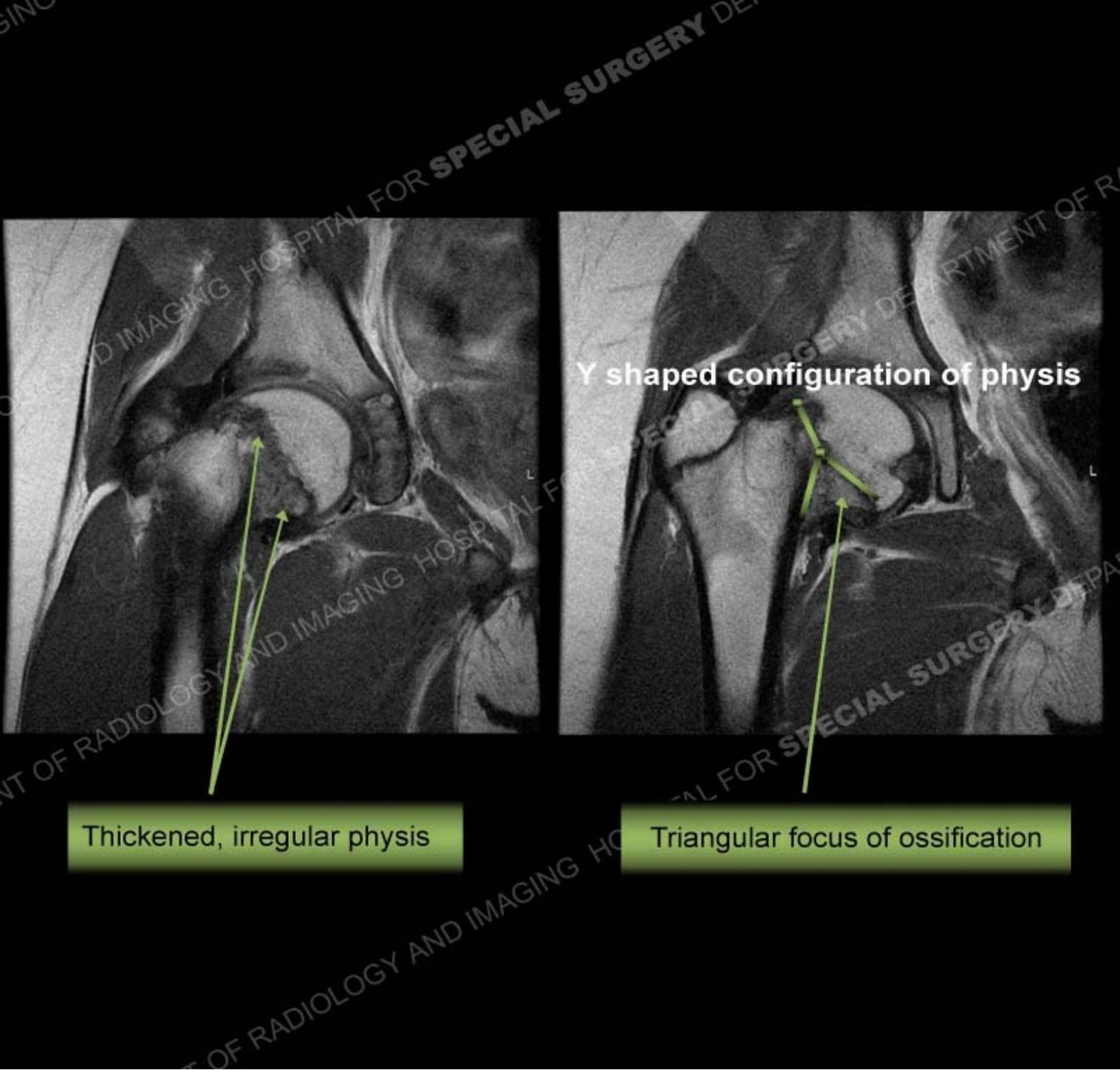
Coronal SPGR (physeal sensitive sequence) images of the right hip

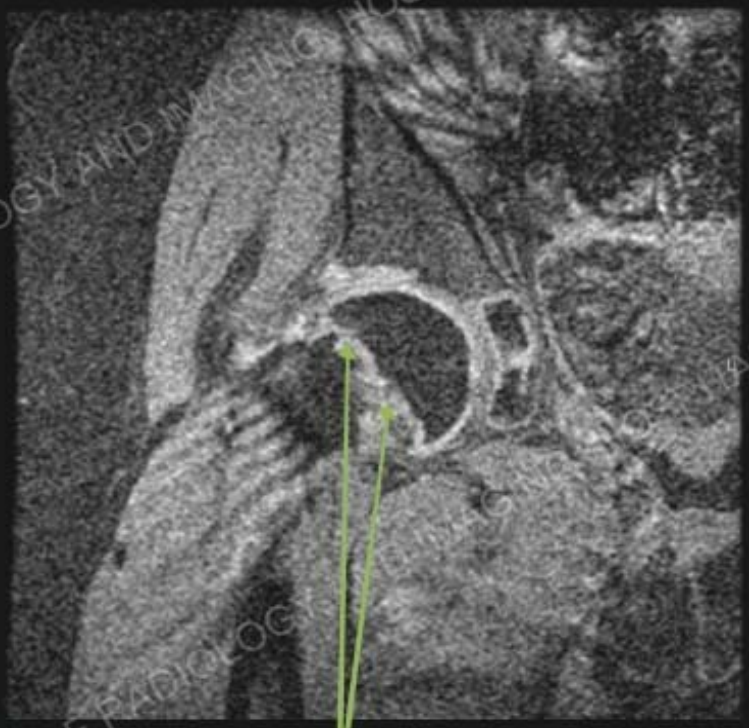
Findings

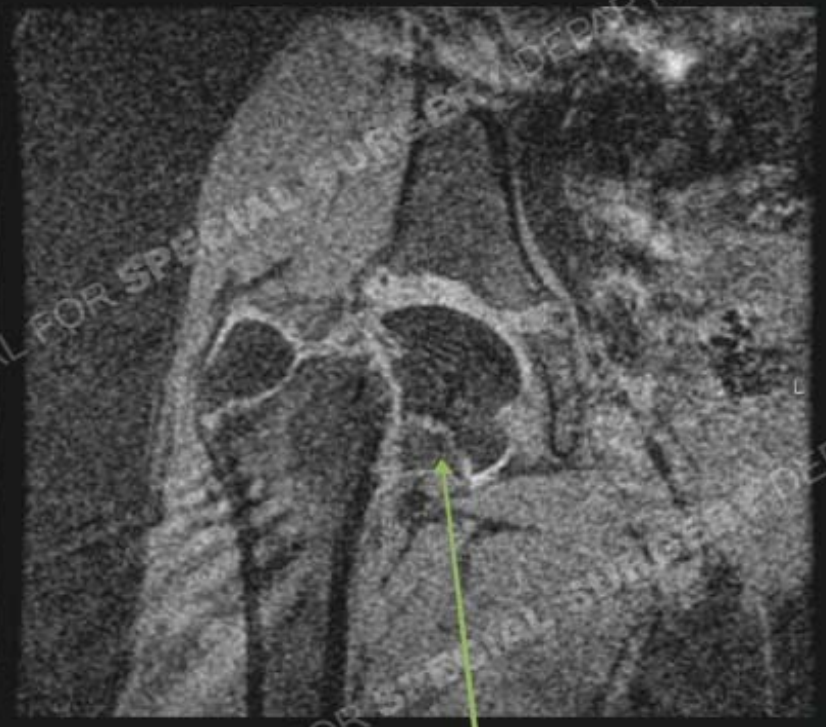
Radiographs of the pelvis demonstrate coxa vara of the right hip. An irregular, widened right capital femoral physis is present with a vertical orientation and Y shaped configuration of the physis. There is also a triangular focus of ossification along the inferomedial aspect of the physis. Scanogram shows a 2.5cm limb lenth discrepancy. MR images demonstrate a widened, irregular, proximal femoral physis with the inferomedial, triangular focus of ossificiation. A mild degree of edema is seen about the right, proximal femoral physis.


Widened, irregular right capital femoral physis with vertical orientation and Y shaped configuration.
Normal physis


Widened, irregular proximal femoral physis
Triangular ossification at inferomedial aspect of the physis


Y shaped configuration of physis
Thickened, irregular physis
Triangular focus of ossification





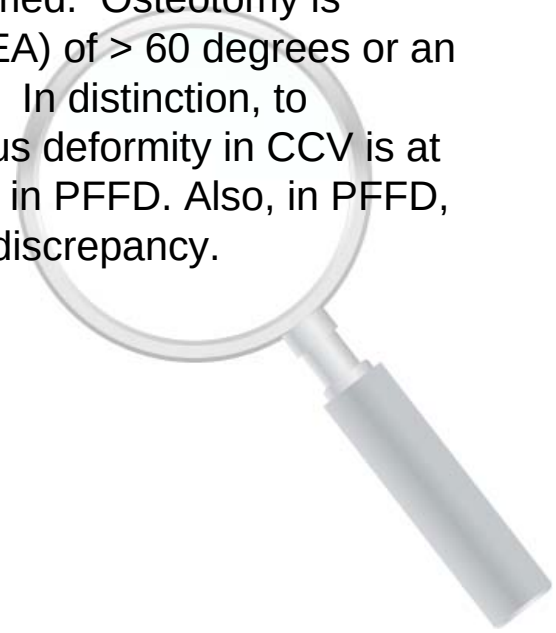
Irregular, widened femoral physis

Triangular focus of ossification

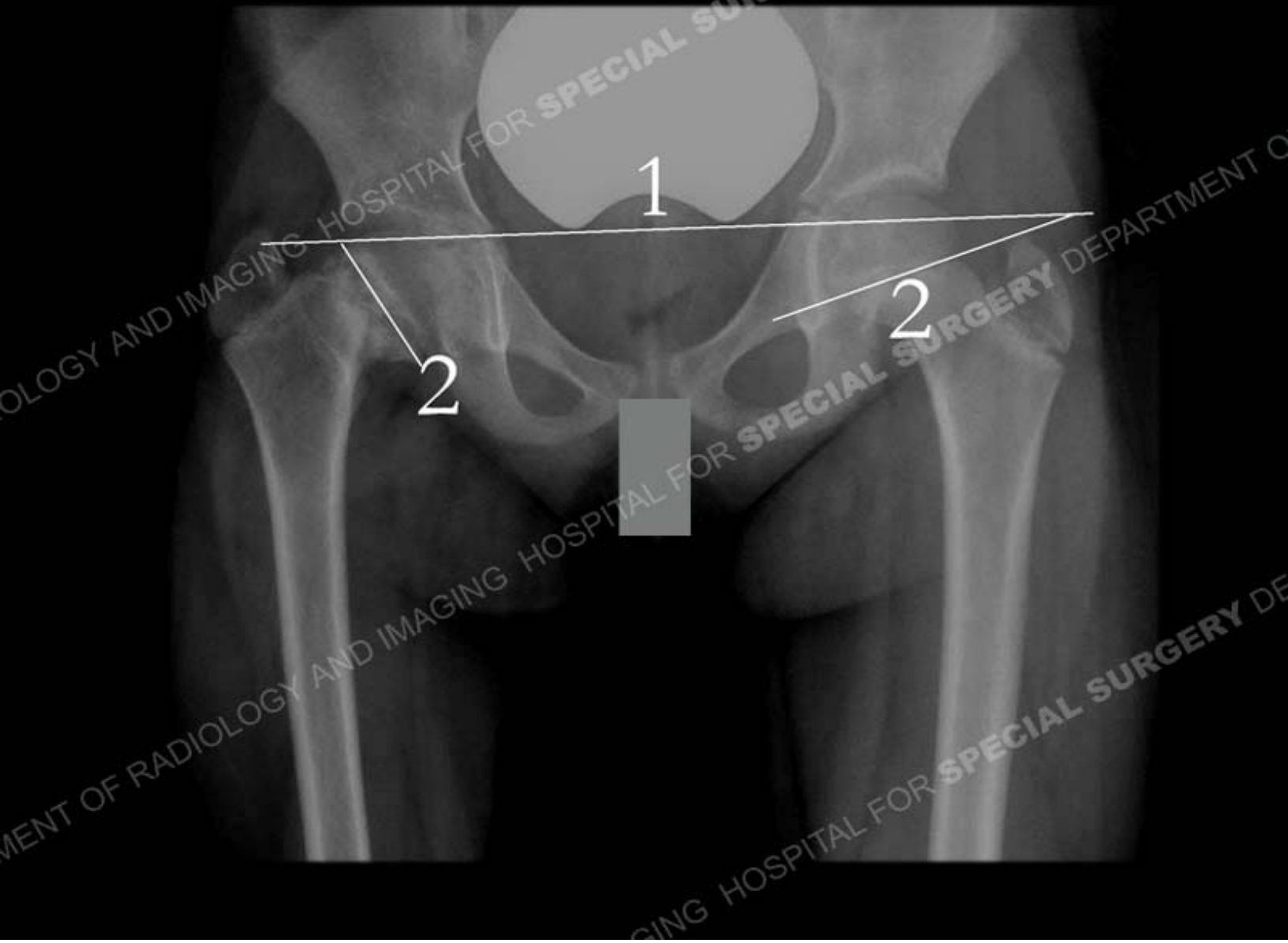
Diagnosis: Infantile or congenital coxa vara (CCV)

Infantile or congenital coxa vara results from abnormal maturation of the proximal femoral physis that causes decreased ossification, weakening of the bone, and subsequent coxa vara. Classically, as in this case, there is a Y shaped configuration of the proximal femoral physis and a focus of ossification inferomedially. Patients typically present from the time they start walking up to about 6 years of age and present with a limp.

There is often a mild limb length discrepancy of 2-4 cm as is seen in this case. If necessary, a valgus osteotomy is performed. Osteotomy is indicated for a Hillgenreiner epiphyseal angle (HEA) of > 60 degrees or an HEA of 45-60 degrees with increasing coxa vara. In distinction, to proximal femoral focal dysplasia (PFFD), the varus deformity in CCV is at the level of the physis and not subtrochanteric as in PFFD. Also, in PFFD, there is typically a more pronounced limb length discrepancy.



HEA: Angle subtended by a line between the triradiate cartilages (1) and a line of the proximal femoral physis (2). Notice the very high (>60 deg) angle on the right and the normal angle on the left of 20-25 degrees.



Postoperative

Marked reconstituion of alignment

Preoperative

Postoperative

Resources

- http://www.posna.org/education/StudyGuide/coxaVara.asp
- http://emedicine.medscape.com/article/1259556-overview
- **Very special thanks to Roger Widmann, MD for his assistance in this case presentation.**