The ‘fat’ C2 sign

The ‘fat’ C2 refers to the apparent increase in the distance between the anterior and the posterior margins of the C2 vertebra when compared with the similar two margins of the C3 vertebrae (Fig. 1) on a lateral cervical spine X-ray in a trauma setting. This is caused by an obliquely oriented fracture which may be obscured on anteroposterior or lateral film as the fracture lines are not perpendicular to the plane of the radiograph (Fig. 2).

The applied traumatic forces may cause the interruption of the anterior (with primarily hyperflexion injury) and posterior (with primarily hyperextension injury) or both (combined injury) margins with apparent enlargement of the C2. The recognition of fat C2 sign is important as these fractures are unstable with ligamentous disruption. Delay in diagnosis may be devastating to the patient.


The pulsation sign

Pseudoaneurysm or avascular lesion can be missed on magnetic resonance (MR) imaging even with IV contrast. Surrounding hematoma of different stages can complicate the matter even further (Fig. 1a). However the recognition of ghosting artifact in the phase-encoding direction in line with the lesion along with signal void on the standard SE sequences are important clues to the diagnosis (Figs 1b and 2).

Thus pulsation artifact can be used as a diagnostic clue, especially in musculoskeletal imaging where it is normally not that marked.

Fig. 1a. Patient with a few months' history of an enlarging mass in the right thigh. Sagittal T1 shows a complex cystic mass with a central signal void (arrow).

Fig. 1b. Post contrast axial T1 shows central minimal enhancement (arrow) and the pulsation artifact in the phase-encoding direction (AP) indicating the vascular origin of the lesion (thick arrows).

Fig. 2. CT angiography with sagittal multiplanar reconstruction confirms a pseudoaneurysm of the profunda artery (arrow).