

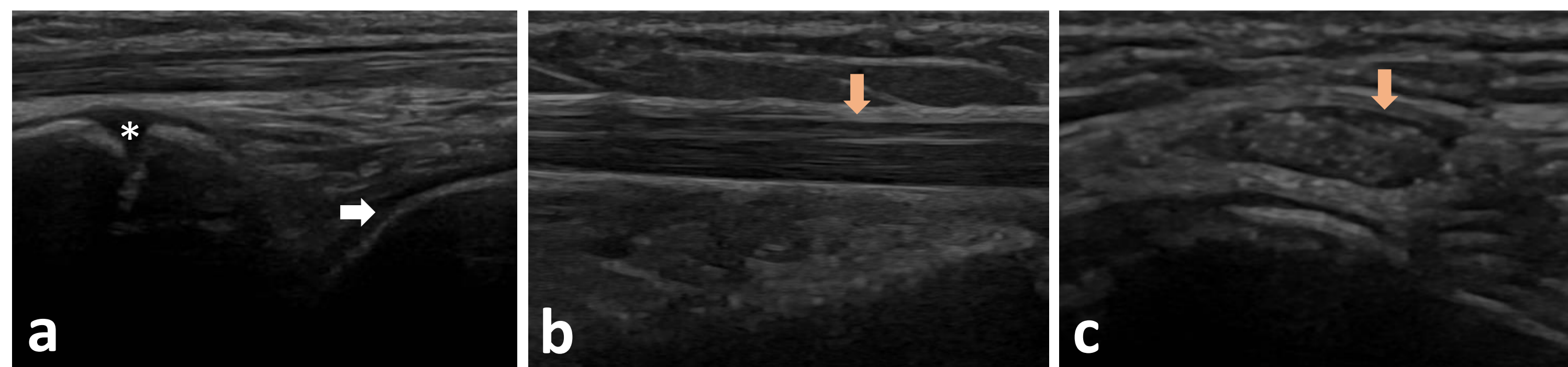
Juvenile Idiopathic Arthritis: Common ultrasound findings and pitfalls.

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Juvenile idiopathic arthritis (JIA) is one of the most prevalent rheumatic disorders and a cause of acquired disability in children [1]. The term encompasses a group of heterogeneous disorders characterized by persistent synovial inflammation which can lead to cartilage damage and long term physical impairment [2]. As ultrasound is a safe and non-invasive modality, it is an important diagnostic tool in the detection of synovial diseases and management of JIA to prevent future complications. This poster will highlight common ultrasound findings and pitfalls in scanning children with JIA.

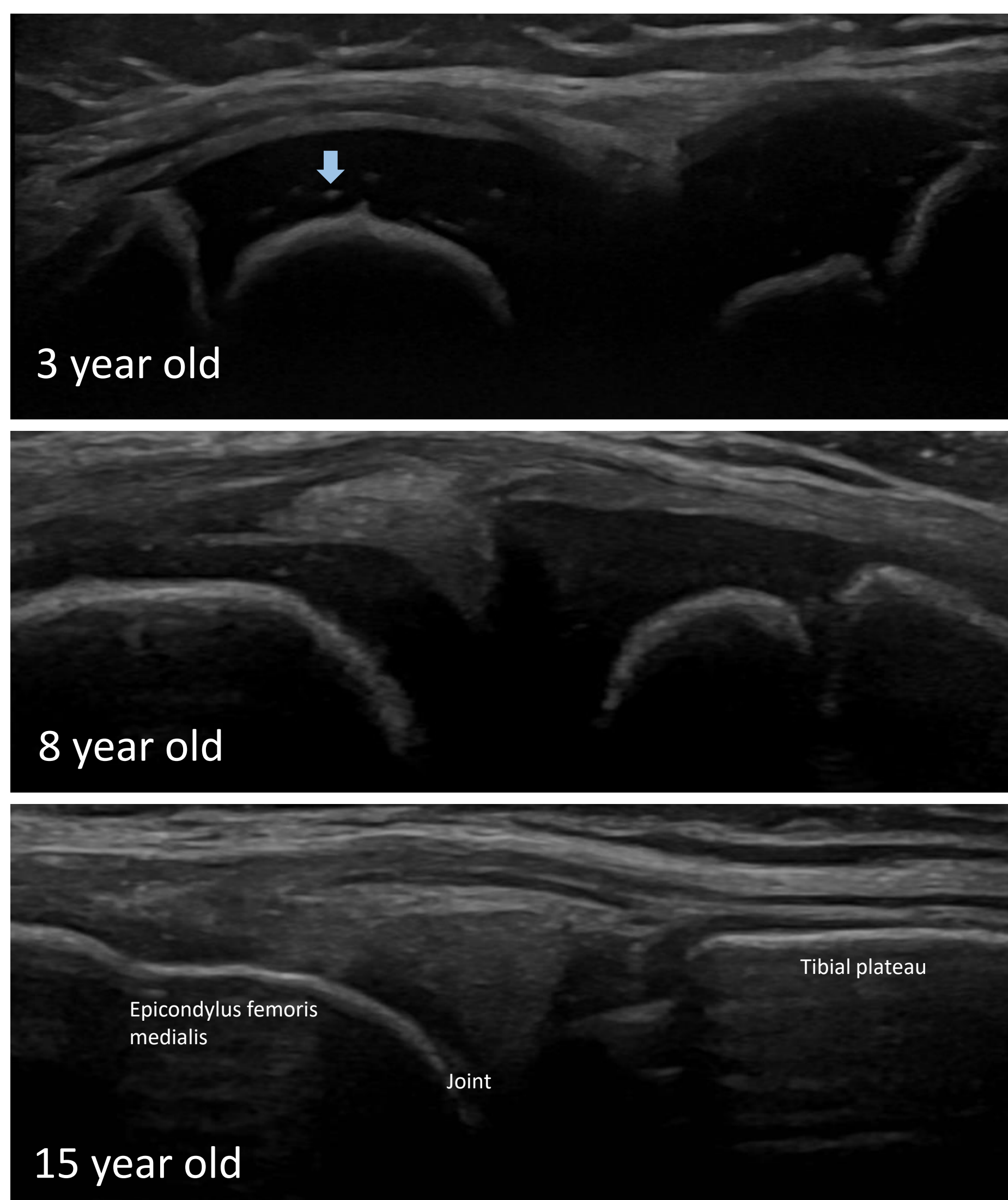
Normal Anatomy



Images of the (a) tibiotalar joint space demonstrating normal hypoechoic articular cartilage (white arrow) and (b, c) extensor tendon demonstrating a normal thin tendon sheath (orange arrow). (*) Growth plate.

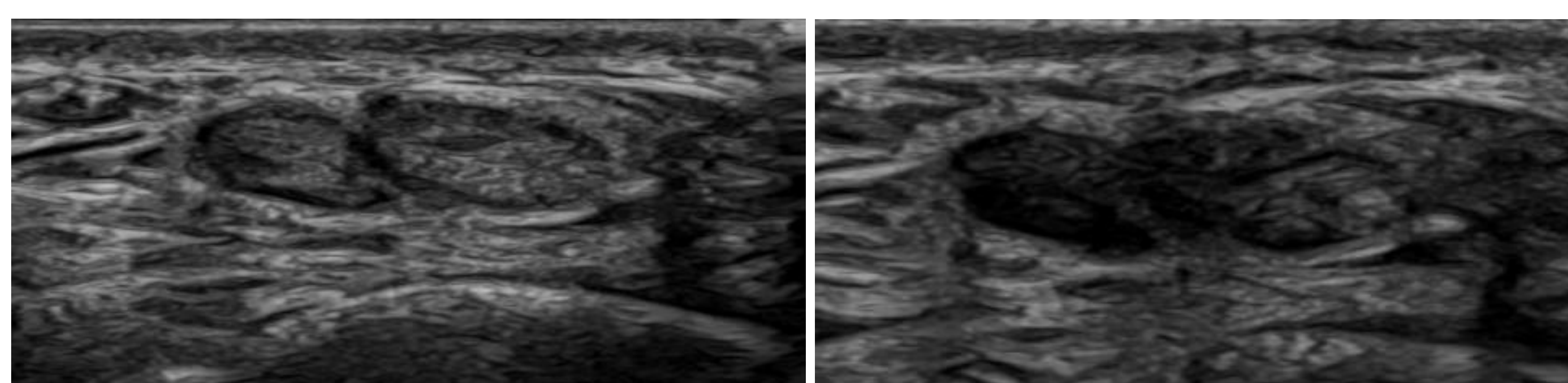
Ultrasound Pitfalls

Unossified Cartilage



Longitudinal scans of the medial knee joint in healthy patients demonstrating the changes in cartilage with advancing age. The unossified cartilage appears hypoechoic with internal echogenic echoes correlating to blood vessels (blue arrow) [1]. With advancing age, the articular cartilage covering the epiphysis remains hypoechoic. These appearances are not to be mistaken for joint effusion.

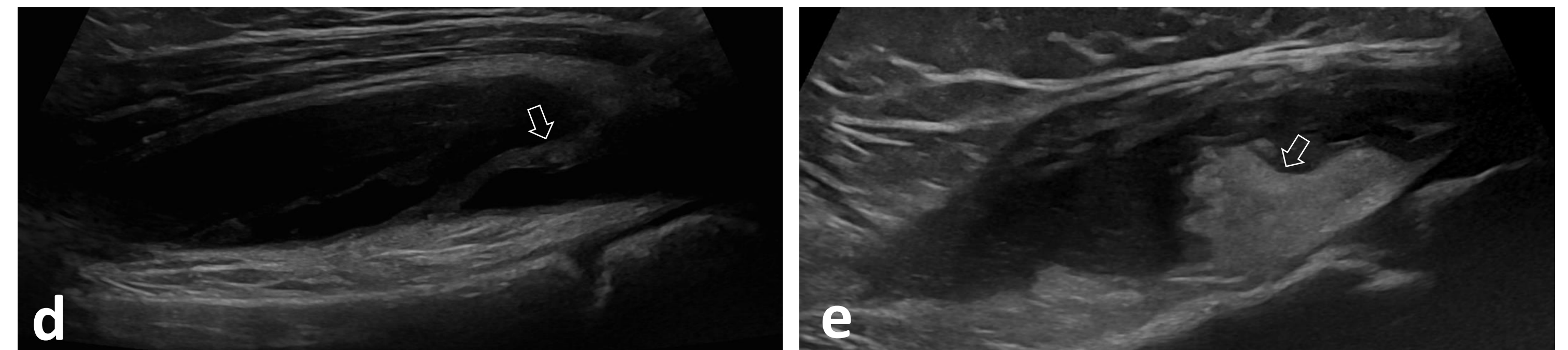
Anisotropy



Anisotropy is a common artefact that occurs when the angle of the ultrasound beam is not perpendicular to the imaged tendon or ligament causing fibres to appear hypoechoic and mistaken for pathology [1]. (a) Transverse scan of the peroneal tendons demonstrating normal tendon fibres compared to (b) hypoechoic and loss of fibrillar striations due to anisotropy.

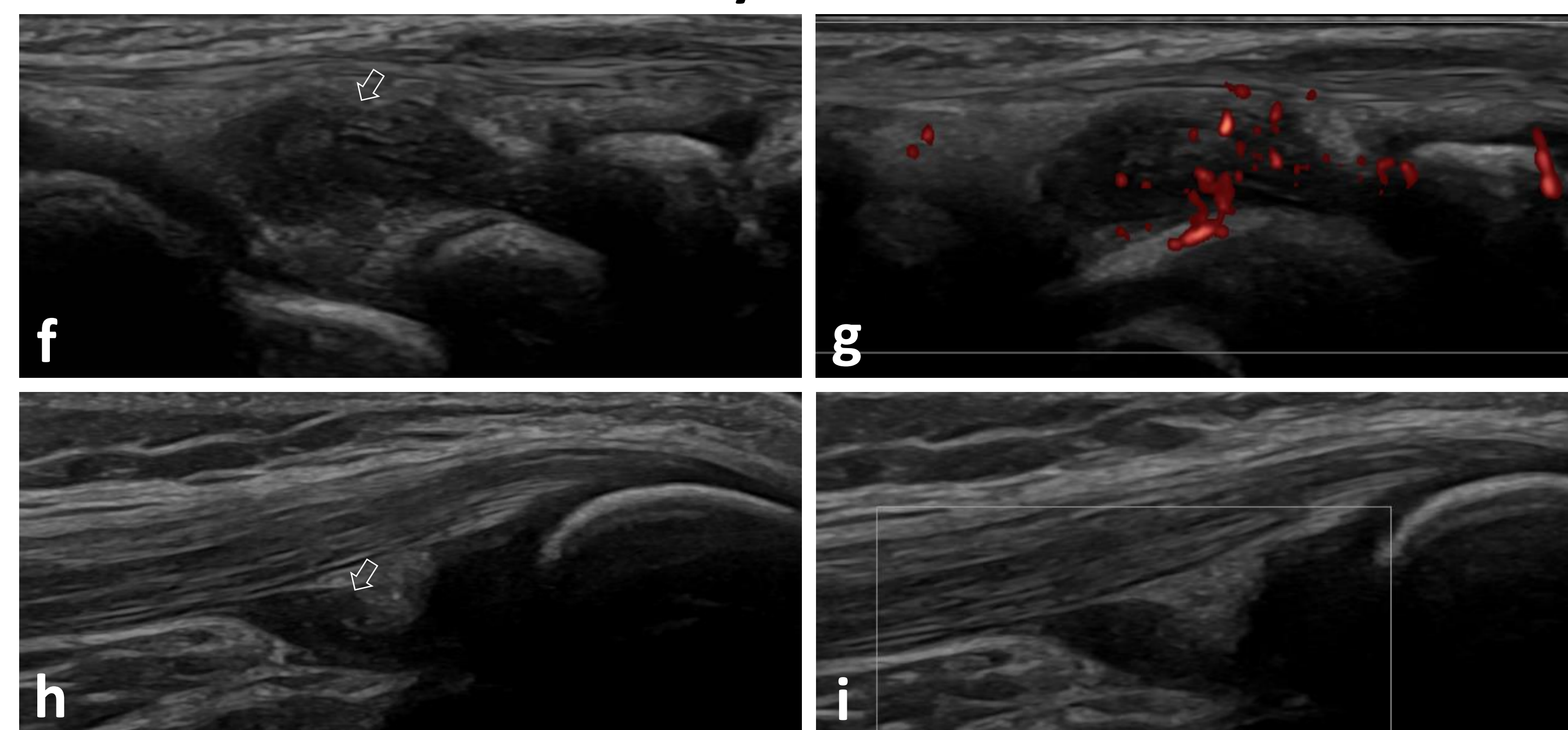
Pathology

Joint Effusion



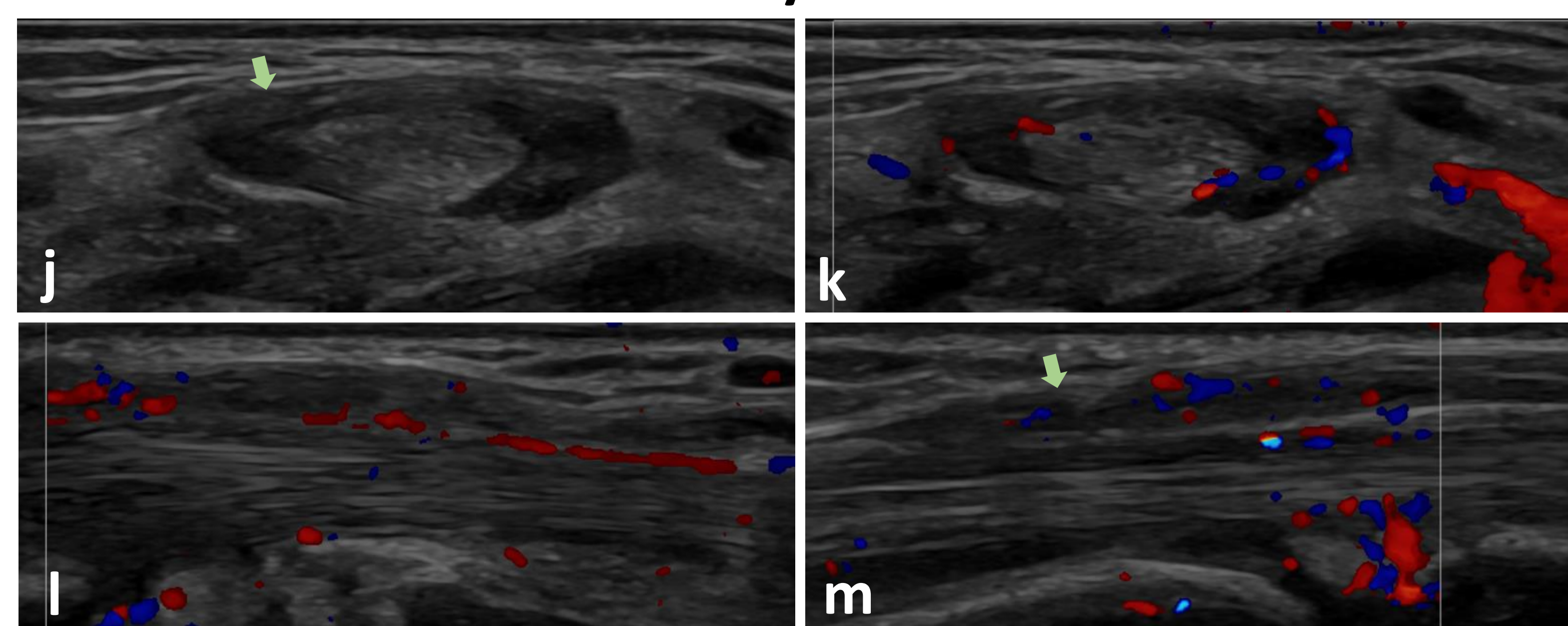
(d) Simple anechoic and (e) complex suprapatellar joint effusion with synovial thickening (outline arrow).

Synovitis

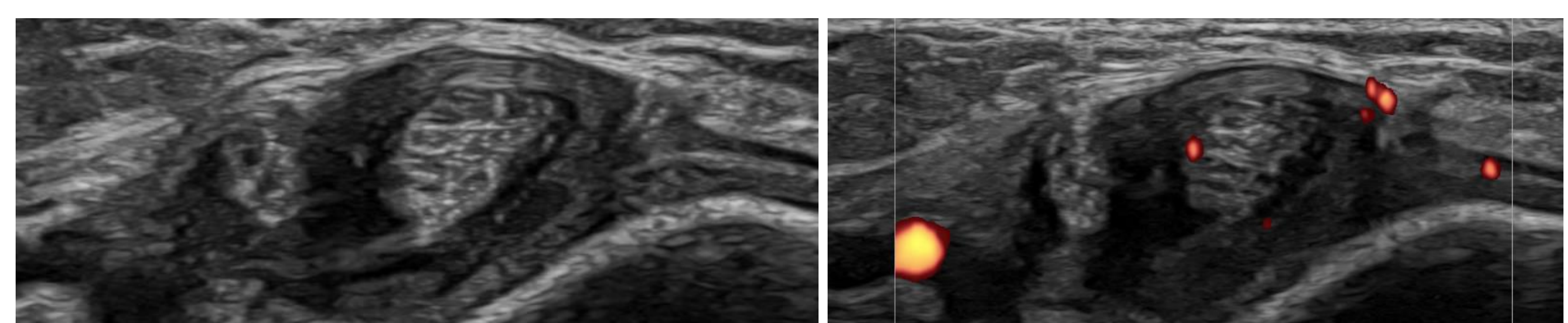


Longitudinal views of the (f) radiocarpal joint with synovial thickening demonstrating (g) hyperaemia. (h) Suprapatellar joint recess with synovial thickening however (i) no hyperaemia to suggest active synovitis. Outline arrow: synovial thickening.

Tenosynovitis

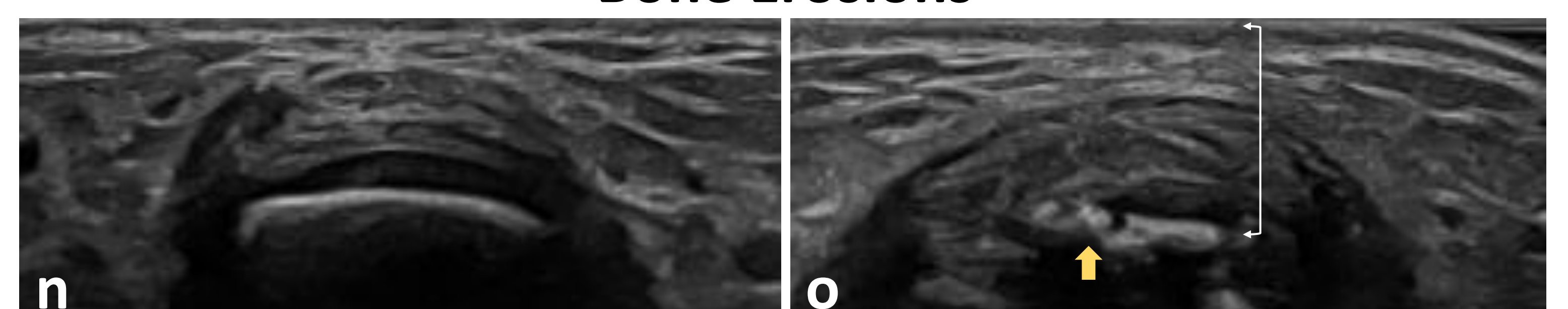


(j, k) Transverse and (l, m) longitudinal images of the tibialis posterior tendon: Thickening of the tendon sheath (green arrow) with hyperaemia.



Chronic inactive disease may demonstrate tendon sheath thickening with minimal vascularity [2].

Bone Erosions



Transverse views of the 2nd metatarsophalangeal joint (MTPJ) : (n) normal MTPJ, (o) demonstrating bony deformity and erosions (yellow arrow) due to cartilage degradation from joint inflammation and soft tissue oedema (j).

References:

[1] Basra HAS, Humphries PD. Juvenile idiopathic arthritis: what is the utility of ultrasound? *Br J Radiol* 2017; 90: 20160920

[2] Lanni S, Wood M, Ravelli A, Manzoni SM, Emery P and Wakefield RJ. Towards a role of ultrasound in children with juvenile idiopathic arthritis. *Rheumatology* 2013; 52:413-420