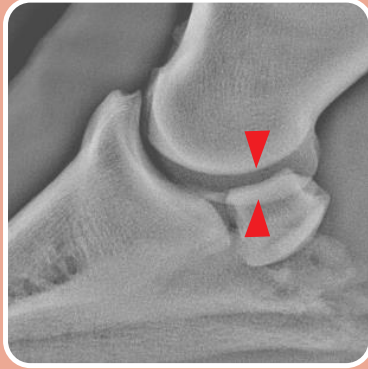
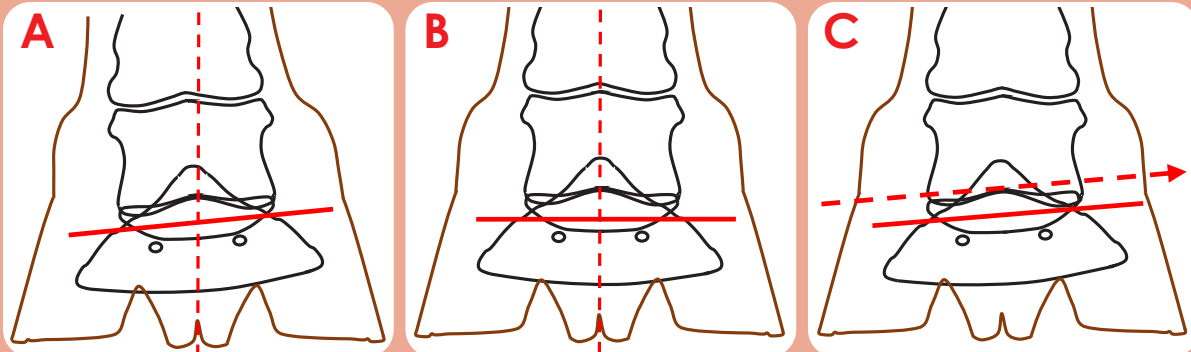


Lateromedial (LM)

Obliquity can occur by **rotation** and/or **tilt** of the foot, relative to the beam. Careful positioning can avoid these in most horses. Here is how to **identify** and **correct** for them when present:

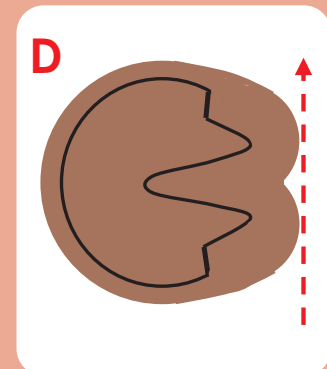
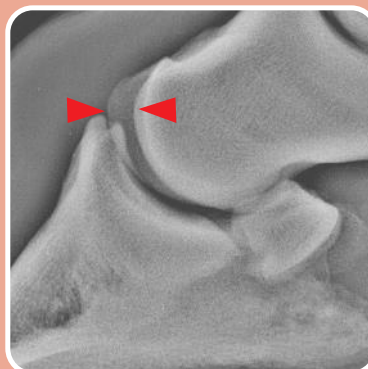


Tilt occurs if the limb isn't vertical or if there is mediolateral imbalance of the foot. The **distal aspect** of the distal condyles of the middle phalanx will not be superimposed (arrowheads).



If the limb is not vertical (**A**) then the phalanges and navicular bone will be tilted (solid line). Images acquired with a horizontal beam will be oblique. To correct, reposition the limb (**B**).

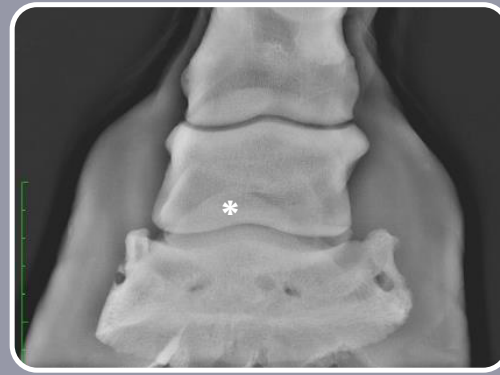
If there is mediolateral imbalance (**C**) then the distal phalanx and navicular bone will be tilted (solid line) relative to a horizontal beam, and there will be obliquity in the resultant image. To correct for this, angle the beam in the same direction as the tilt (dashed line).



Rotation is avoided by aligning the beam parallel to the heel bulbs (**D**; dashed arrow), but misshapen feet can make this difficult. The **dorsal aspect** of the distal condyles of the middle phalanx will not be superimposed (arrowheads) if there is rotation.

TIP: look at the dorsopalmar image to work out the direction of rotation!

Dorsopalmar (DP)



The foot is **rotated** relative to the beam. The extensor process (*) is superimposed medially (left of image), indicating that acquisition was from the dorsolateral aspect. To correct, reposition the generator more medially. If the extensor process is lateral, reposition more laterally.

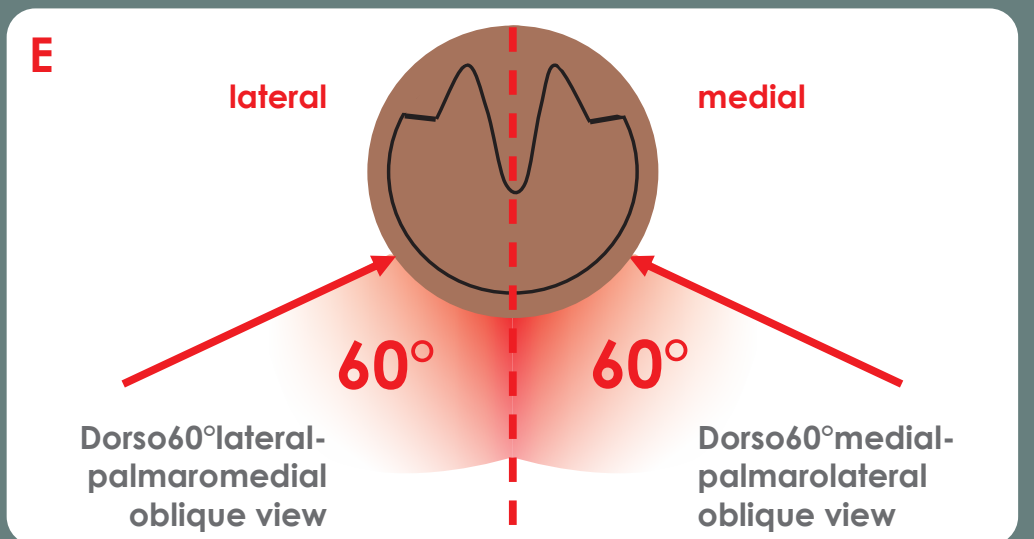


Superimposition of the phalanges can occur if acquiring the image with the foot non-weight bearing on a block. If the limb is too protracted or high then the fetlock may 'drop', causing the middle phalanx to be superimposed over, and obscure the extensor process and distal interphalangeal joint.

TIP: acquiring the DP view first can help assess foot imbalance and limb positioning for the other views.

Oblique views (flexed DM-PaLO and DL-PaMO)

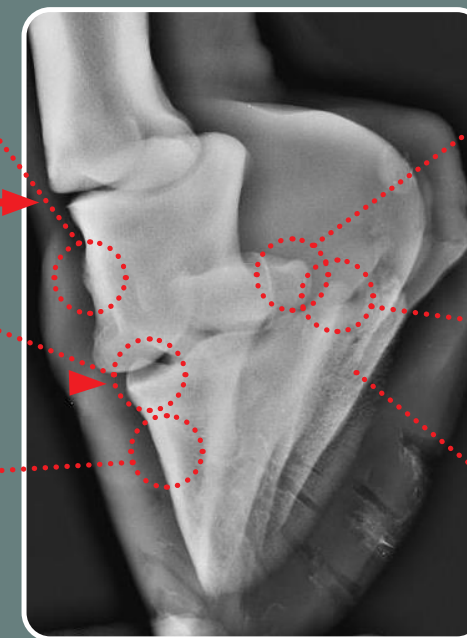
Flexed (or non-flexed) oblique views can provide **additional useful information** and are essential for the evaluation of the **palmar processes** of the distal phalanx, and **ossified ungular cartilages** ('sidebone').



Eminence for the origin of the medial (or lateral) collateral ligament of the distal interphalangeal joint

Extensor process of the distal phalanx

Typical site for new bone formation associated with abnormal stress on the suspensory apparatus of the distal phalanx



Lateral (or medial) aspect of the navicular bone. Region of the insertion of collateral sesamoidean ligament

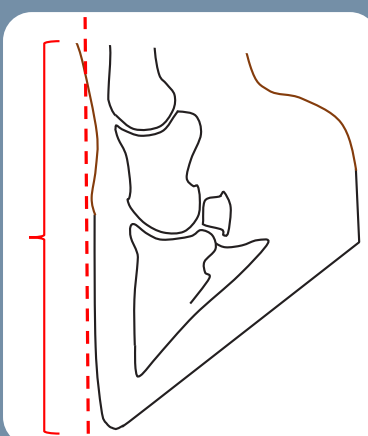
Base of the (mildly ossified) ungular cartilage. Predilection site for fractures in markedly ossified cartilages

Lateral (or medial) palmar process of the distal phalanx

The 60° oblique view (**E**) allows better visualisation of the margins of the proximal (arrow) and distal (arrowhead) interphalangeal joints. The 45° oblique view allows better visualisation of the palmar processes of the distal phalanx.

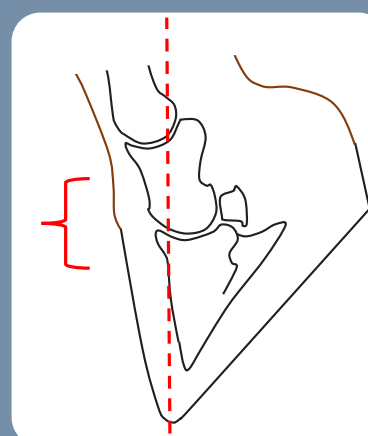
Dorsoproximal- palmarodistal oblique (DPr-PaDiO)

'Upright pedal'

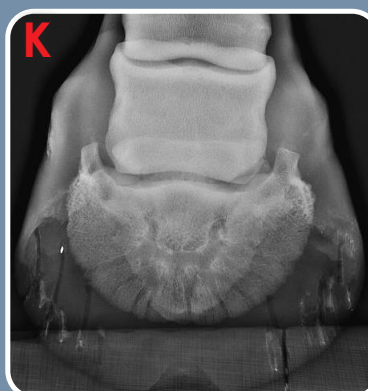


The dorsal aspect of the hoof wall is vertical (dashed line) and the entire foot is included in the area of collimation (red bracket).

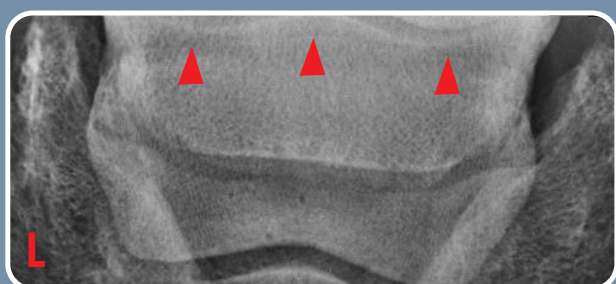
'Upright navicular'



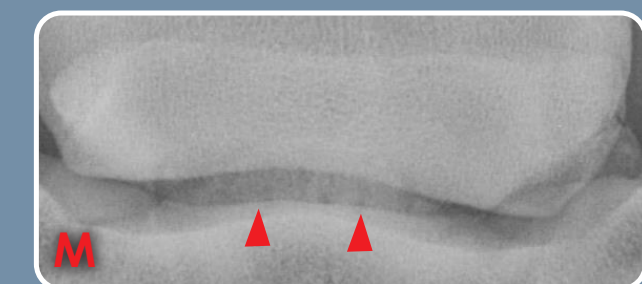
The dorsal aspect of the hoof wall is approximately 10-15° forward vertical (dashed line) and only the region of the navicular bone is included in the area of collimation (red bracket).



It is important to acquire **two** DPr-PaDiO views using different angles and collimation. This is important for full evaluation of the navicular bone and identification of artefacts. An **'upright navicular'** view should be acquired with the limb 10-15° more flexed (non-weightbearing technique) or at a steeper angle (weightbearing technique) than the **'upright pedal'** view (**K**).

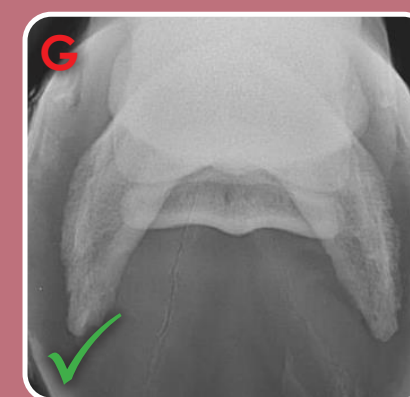
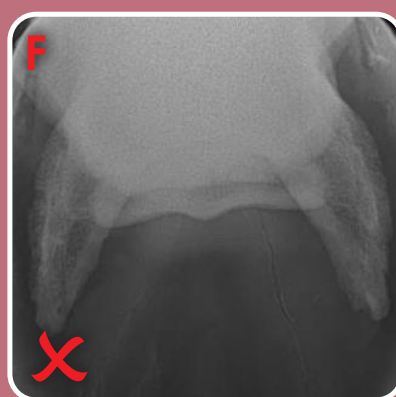


In this upright navicular image, the foot is **too flexed/the angle is too steep**. The navicular bone is superimposed over the proximal one half of the middle phalanx and the proximal border is ill defined (arrowheads).



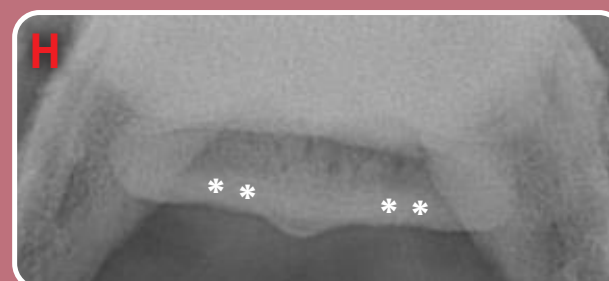
In this upright navicular image, the distal border of the navicular bone (arrowheads) is superimposed over the distal interphalangeal joint: the foot is **not flexed enough/the angle is too shallow**.

'Skyline' (PaPr-PaDiO)



Fetlock obscuring the navicular bone (F): The limb is either not positioned far enough underneath the horse, or the horse is weightbearing incorrectly (i.e. through the imaged limb rather than the contralateral limb). With correct limb position the fetlock should not be superimposed over the navicular bone (**G**).

An incorrect beam angle can make the palmar compact bone of the navicular bone appear thickened and ill defined (**H**; **) when it is in fact normal (**I**; *)! If the palmar compact bone is truly thickened, then it will also be appreciable in the lateromedial view.



Same foot!



The beam must be parallel to the palmar compact bone. Using 45° (dashed line; **J**) is correct for most horses, however if the horse has a long toe and short heels like this horse, a shallower angle is required (solid line; 40°, Image **I**).

Likewise, horses with upright feet require a steeper angle.

TIP: assess foot conformation first to avoid repeat acquisitions!

