



## Cartilage

Cartilage cannot support the amount of load that bone can withstand, but it is much more resilient (as well as being about half the weight of bone), so cartilage is found in regions where the maintenance of shape is important but compressive forces are minimal. (Floyd/Mansmann-Equine Podiatry 2007, page 30)

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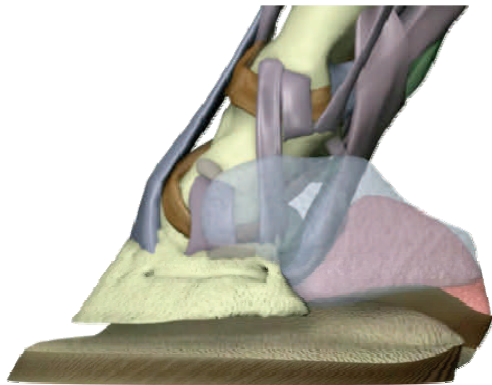
### Lateral or ungu- late cartilage

The hoof cartilages can be considered to be cartilaginous extensions of P3. They are composed of hyaline cartilage. The primary function of the hoof cartilages is to provide a flexible support for the more flexible parts of the hoof capsule. Thin but distinct ligamentous bands connect the hoof cartilages to P2 across the coffin joint. The cartilages are surrounded by a thick, fibrous connective tissue sheath that is continuous with the corium covering P3 and the collateral ligaments of the coffin joint.





Interspersed with the connective tissue are large veins that penetrate the cartilage and form a large venous plexus. On the inner surface of the cartilages, the collagenous bands are continuous with the collagen of the DDFT, so that the arc of the tendon's attachment onto P3 extends around the inside of the hoof cartilages.

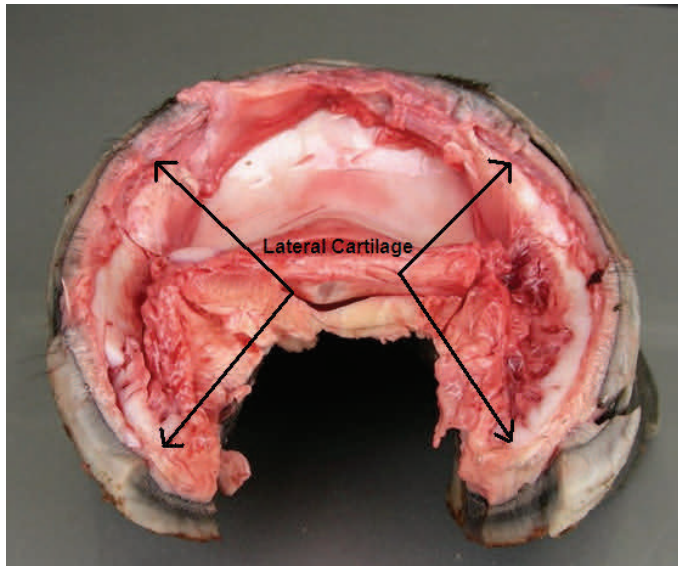


These various attachments suggest that when the hoof lands and the cartilages move apart as the heels spread, the cartilages are distorted in a complex way by their collagenous attachments.

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Right: Another view of the lateral cartilage with the bulb and frog removed



Left: At the height of the coronary band the lateral cartilage covers the inside of the wall on both sides

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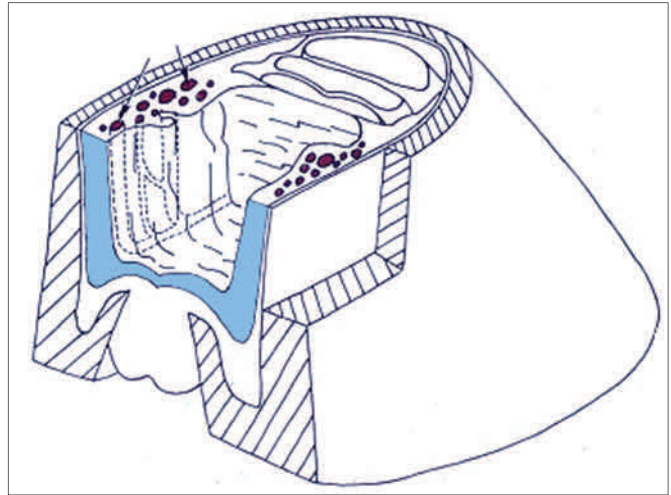


In this picture you see the various ligaments that attach the lateral cartilage to all the bones of the distal limb (P1,2 and 3)

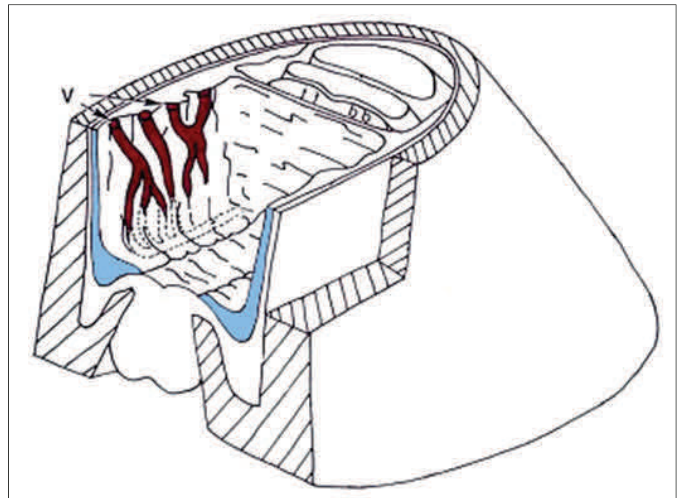


According to Bowker, the thickness and vascularity of the lateral or ungulate cartilage varies.

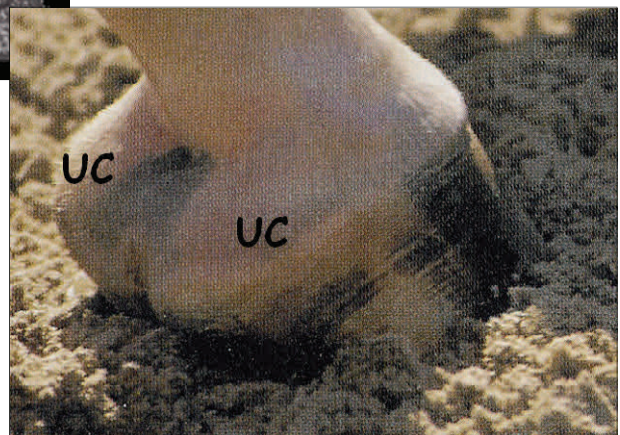
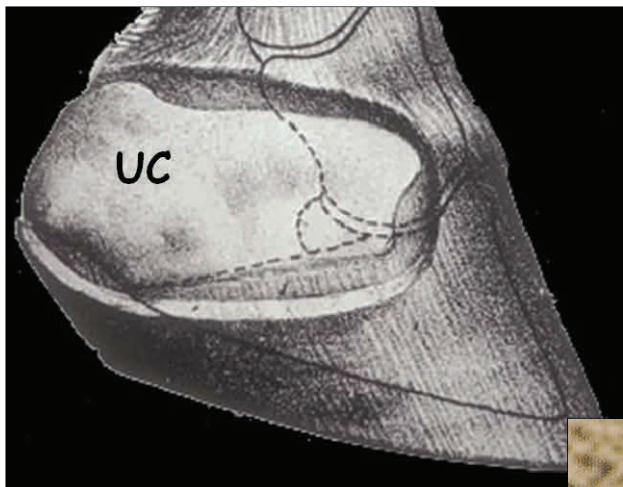
In a healthy hoof the lateral cartilage has a thickness of more than 0.8" and is perfused with many small vessels



In an unhealthy hoof the lateral cartilage has a thickness of less than 0.22" and contains a few large vessels.



The lateral cartilages are connected to the digital cushion.



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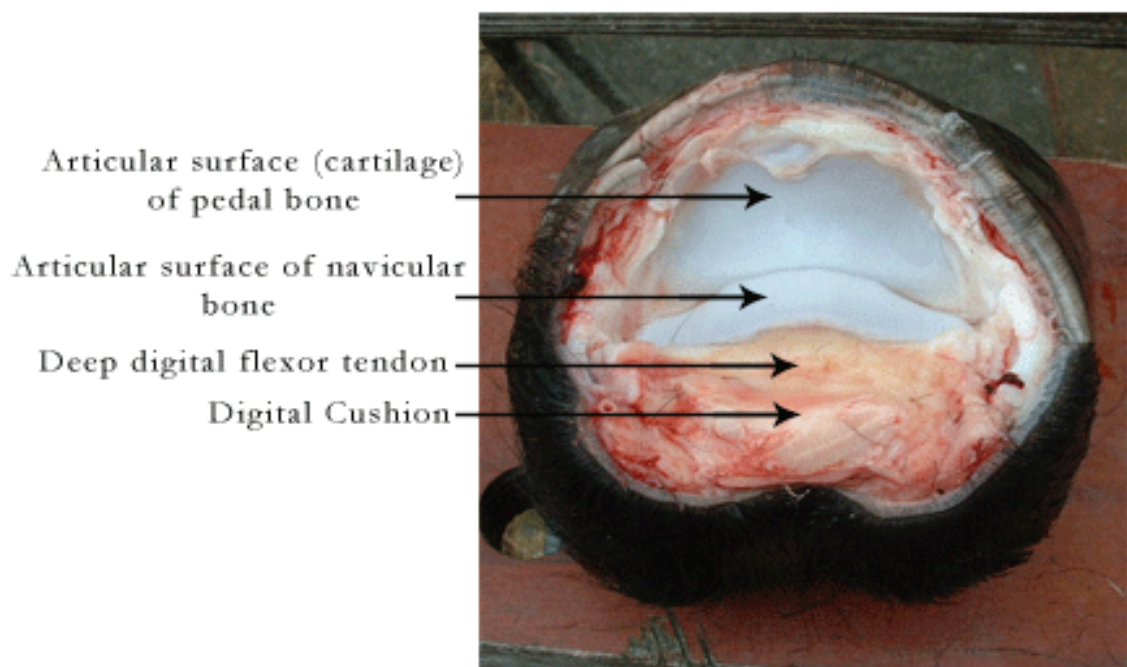
## Articular cartilage

Where bone ends meet to form a joint, they are covered by hyaline cartilage. This cartilage appears bluish white and glistening in a normal healthy joint. Its primary function is to provide some cushioning and minimize friction between bone ends. Normal, healthy cartilage has a smooth surface and is made even more slippery by the synovial fluid that fills the space between the bone ends.

Hyaline cartilage consists of a collagen matrix that is packed with glycoprotein, so it can hold a large volume of water. The water content makes the material resilient and springy when the cartilage is loaded because the water cushions the impact and then diffuses away from regions of high pressure at a relatively slow rate.

The joint needs to move to restore the water content of the cartilage, as the water has to diffuse back into the cartilage from the synovial fluid or from the blood supply around the underlying bone.

To remain effective and retain or regain its resilience, the joint needs to be moved, especially after it has been held under a static load for more than a few minutes.



Text: Various sources

Pictures with permission from the developers of The Glass Horse-The Equine Distal Limb, John Stewart DVM, Dr. Robert Bowker and HoofCareUnLtd.

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