

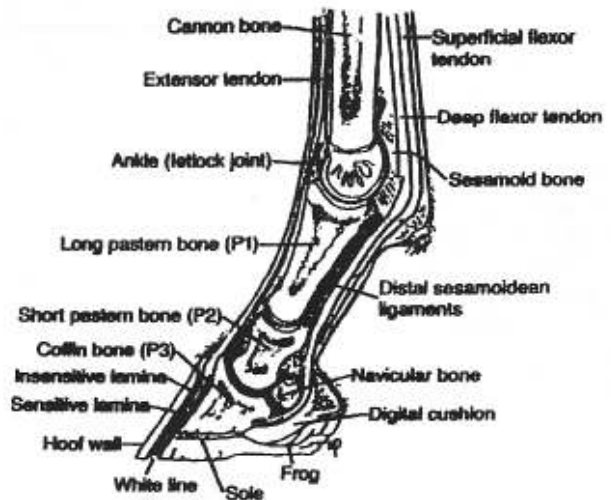
Tacoma Equine Hospital

3112 – 156th Street E. Tacoma, WA 98446 ◊ 253.535.6999

The Equine Foot

The old adage “No Foot, No Horse” is as true today as it was years ago. The horse carries sixty percent of its body weight with its front legs, so problems of the front feet can be absolutely crippling to the whole horse.

The horse’s foot is both confusing and fascinating in its structure. A diagram of the foot follows for your reference. Think of the exterior of the hoof like your fingernail. It is a hard, keratinous substance created at the coronary band (like your cuticle) and grows out towards the ground. It is attached to the inner portion of the foot by a very unique interlocking structure called the corium – this is the “white line”. The corium is a layer of blood vessels, nerves and connective tissue that lies in close proximity to the coffin bone. On the ground surface this corium also grows out, creating the softer sole. It is softer because it has higher water content than the hoof wall. The digital cushion is a spongy, elastic body that lies in-between the coffin bone and the frog like a supportive orthotic for the horse’s foot. There is a theory that it acts as a pump for getting blood to flow more completely through the foot. The navicular bone is a small bone that is situated caudally between the last two bones in the foot and the deep digital flexor. Its function is as a fulcrum over which the work of the deep flexor tendon changes direction to allow the toe to be pulled backwards. It is surrounded by a bursal fluid sac, which permits the movement to happen more smoothly. It is required, by virtue of the weight of the horse and its position in the foot, to absorb a lot of compressive force.



Front Limb: cross section—skeletal, ligaments, tendons

Navicular Disease

Navicular disease occurs when this bone is unable to handle the compressive stresses put upon it. There is a highly genetic component to this disease. Most notably it occurs bilaterally in big-bodied Quarter horses 4-15 years old with upright conformation and small feet. Other factors may contribute to development of this disease, namely faulty foot or leg conformation, trauma to the foot, or exercise on hard surfaces.

As the weight of the horse presses down on the foot during mid-stride, the navicular bone gets pushed towards the ground. At the same time, the deep flexor tendon contracts to allow the toe to be pulled backwards to complete the stride. This contraction pushes the navicular bone upwards. In a navicular bone that is predisposed or genetically weak, this compressive force causes breakdown.

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What happens at the cellular level within the bone is still controversial, but what matters to us as owners is that our horse is chronically, intermittently lame. The diagnosis of navicular disease can be made with diagnostic nerve blocks and radiographs, although sometimes the X-ray findings are very subtle.

Treatment is usually frustrating. Conservative treatment includes:

1. Rest and anti-inflammatory drugs. In most cases the lameness will return when work is resumed.
2. Correcting imbalances of the foot with trimmings and shoeing is imperative. Reestablishing the normal axis of the foot will relieve excessive pressure applied by the tendon to the navicular bone.
3. Intra-articular corticosteroid injections will be very effective for short-term relief. The length of time of relief depends upon the severity of the disease.
4. Surgical removal of the nerves that supply pain sensation to the navicular area (neurectomy) is a more invasive, but usually the most effective way to manage navicular disease. This does not cure the disease, but merely takes away the pain of the disease and allows the horse comfort and the ability to work. There are several complications to this surgery so a consult with our office is a must before this step is taken. The duration of relief varies from horse to horse and is dependent upon surgical technique and adherence to post-surgical recommendations.