



Horse Care

Hock Problems in Horses

by **HEATHER SMITH THOMAS**

A horse's hind legs are usually less susceptible to injury and lameness than their front legs—mainly because front legs carry more weight and are subject to more concussion. Hind limbs may suffer stress, however, especially in the hock joint, since hind legs provide much of the propulsion power and may carry the horse's full weight when changing direction swiftly. The hock joint is sometimes injured by quick starts, sudden stops or pivoting turns.

The horse's hock is the same joint as the human ankle, containing the same seven bones. The hock must be strong enough, though, to carry eight times the weight, while being subjected to twisting, turning and extra stress as the horse jumps, races or performs other athletic maneuvers. Poor hind leg conformation puts more strain on various parts of the joint. The hock forms a hinge between the upper leg bone and the cannon bone. The five smallest bones in the hock stack on top of the cannon bone and act as shock absorbers.

The hock serves as anchor point for the big Achilles tendon that runs up the back of the leg. The moving parts of the hock are connected by joint capsules and ligaments.

As a hinge, the hock moves the leg forward. Yet it must also be completely rigid at the body-support phase of the stride, with all joint surfaces making a perfect fit for an instant of compression and rigidity. A well built hock goes through its movements smoothly, even when the horse runs, bucks, jumps, blasts out from the starting gate or

stops suddenly on uneven terrain. A poorly constructed hock may not hold up under these stresses. If any part of the joint is in the wrong place at the wrong time, tremendous strain occurs on the joint, putting about 1,000 pounds of pressure on bones or connective tissues that are not ready for it.

Every time a horse takes a step, the hock compresses to handle the concussion. As the foot lands, hock bones twist and untwist as they move in and out of the rigid support position—tendons and ligaments stretch as the leg moves forwards and backwards during the hock's hinge action. Hock problems such as bone spavin or bog spavin



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can develop if something goes wrong. Bone spavin is a bony enlargement created by inflammation of the bone (arthritis) and subsequent new bone growth. A bog spavin is a chronic swelling in the hock joint capsule.

Bone Spavin

Due to inflammation and arthritis, there is some degree of fusion and immobility when a horse develops bone spavin. Usually stress (on the small tarsal bones stacked on top of the cannon) is the cause. The stress may be due to misalignment when the hock takes

weight, or to hock conformation that puts part of the joint in the wrong place at the wrong time, resulting in uneven wear on the bone surfaces. Bone spavin can be caused by conformation faults such as sickle hocks or cow hocks, both of which put extra stress on the joint.

The most trouble-free hocks are large and strong, associated with well balanced hind legs with proper angles. The hind leg should be straight from buttock to foot, when viewed from the rear. When viewed from the side, the hock should be positioned under the buttock, and a line dropped from the point of the buttock should just touch the back of the hock and follow the back of the cannon on down to the ground—the cannon should be perpendicular to the ground and not angled.

A horse with sickle hocks has too much angle in the hock joint; when viewed from the side, the cannons are angled with feet too far forward, under the body instead of directly under the buttocks. A cow-hocked horse has hocks too close together and feet too wide apart. Some horses are

both cow-hocked and sickle-hocked—a bad combination that puts more stress on the joint. Narrow, thin hocks are also more subject to bone spavin than are large, strong joints. Horses that move the hind legs with a twisting motion, especially when the foot is on the ground, put stress on the hock joints. Shoeing a horse unevenly (one heel higher than the other) can also put unequal strain on the hock ligaments and increase the risk for bone spavin.

Bone spavin can be caused by excessive stress, immaturity of the bones

(strenuously working a young horse) or Osteochondritis dissecans (OCD) lesions in the hock. OCD, caused by overfeeding fast-growing youngsters (with resultant skeletal problems), creates weak spots in growing bones—where the cartilage in joints doesn't turn to bone properly. These areas are more vulnerable to inflammation or to separation of the cartilage from the underlying bone. This can lead to development of bone spavin at an early age.

The hock is a common site for OCD lesions; bone flaps may appear on the tibia, next to the upper hock bones. Fragmentation of the joint cartilage, separating from the bone, may begin at six months to a year of age in the fast-growing young horse, but signs of trouble may be mild and not noticed until the horse is put into training—when additional stress on the joint causes obvious swelling and pain.

Bone spavin can also start with a sprain that tears a ligament where it attaches to the joint. This creates inflammation in the bone lining, stimulating bone-forming cells to new growth, later fusing the cannon and tarsal bones. This results in some loss of hind leg flexibility, and may be accompanied by arthritis.

If the hock joint is weak or under excessive strain, cartilage between the bones starts to wear. Once the cartilage is worn away, there is no cushion between the bones—they become inflamed as they grate against one another. Spurs of new bone growth occur low on the hock joint's inside front surface, eventually fusing the bones together. Sometimes, after the bones fully fuse and heal, there is no more inflammation or pain and the horse becomes relatively sound again—except for loss of flexibility in the hock joint.

All too often, however, a horse with bone spavin suffers from continuing arthritis and lameness. If the bone-forming process is within the hock interior, there will be no visible changes in the joint, just lameness.

These interior bone spavins are termed blind or occult spavin.

Bone spavin causes lameness and pain when the horse flexes the joint, and is also painful each time the hock goes into its rigid, weight-bearing position. If the hock hurts when he flexes it, the horse takes a shorter, lower stride and tries to land on the toe of his foot to avoid extra flexion. The horse that suffers pain when the hock bears weight shortens its stride and snatches that leg up quickly. Since he puts that foot down sooner and picks it up more



quickly than normal, it must stay in the air longer than the sound leg, so he develops a hitch in his gait.

The toe of the affected foot is worn short because the horse jabs it into the ground as it lands. Eventually, the toe wears down, leaving the heel too high. The reduced flexion in the hock makes for exaggerated hip action, giving a rolling motion to the horse's gait as the hip on that side rises higher than normal and the opposite hip drops down.

Lameness from bone spavin is usually worst when the horse is first exercised after a rest. In mild cases, he seems to get better after warming up; in some

instances lameness will almost disappear after they get going. But in severe cases, the lameness becomes worse with exercise. A horse with bone spavin will usually show more obvious lameness if turned in a small circle with the lame leg on the outside. He takes his foot off the ground in a jerky manner.

Another test for bone spavin involves forced flexion of the joint to help confirm the diagnosis (often called the "spavin test" because most horses react positively if they have bone spavin). The test consists of keeping the hock flexed by holding the hind foot up nearly to the horse's belly for a couple of minutes, then trotting them immediately after letting the foot down. If in the first steps they show more lameness than usual, they probably have bone spavin. It must be kept in mind, however, that the same results may occur if the horse has a sprained tendon or some other type of hock problem.

Bone spavin creates an enlargement on the inner surface of the hock, sometimes detectable only with radiographs. If spavin lies under the cunean tendon, some veterinarians recommend surgical removal of part of that tendon to give the horse relief. In some cases, the involved hock bones can be surgically fused to help eliminate pain. David McCarroll, DVM (Goldsby, Oklahoma) treats spavin with lithotripsy, a procedure using shock waves in a water-filled "balloon," focused on the problem area of the hock with a laser-targeting device. The shock waves seem to help ease the pain and also tend to result in new bone growth that can lead to fusion of the joint.

Chances for complete recovery are better if the involved bones fuse together. The shock wave treatment seems to work better than the traditional regimen of trying to hurry the fusion by giving painkillers to allow the horse to keep working so bone surfaces stay irri-

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tated—to stimulate new bone growth.

A traditional method was to alternate rest and work, to rest the horse a certain period of time to allow the bone to heal and hopefully fuse, then work the horse to stimulate more bone growth. It might take two or three years for complete fusion, and some hocks never do fuse but continue to have arthritis. Even a horse that has healed may be slightly lame when first starting

work, especially in cold weather.

Bog Spavin

This type of spavin is soft swelling, resulting from excessive fluid within the joint capsule. Swelling is chronic and often permanent. It may be due to strain, especially if the hocks are too straight when viewed from the side—instead of being directly under the buttock, the hock joint, is more forward, under the stifle. This type of hind leg is also prone to upward fixation of the patella, a catching of the

stifle joint with hind leg extended behind the horse, unable to flex.

Bog spavin can be caused by severe injury to the hock, or strain from quick stops and turns (a lot of weight is suddenly put on the hocks). Stallions that do a lot of playing and rearing may develop bog spavin if their hock structure is not correct. If the big hinge joint in the hock is injured, the joint capsule works overtime to produce extra lubricating fluid, ballooning the joint capsule and stretching it. Once stretched it stays that way, leaving the horse with a permanent enlargement.

The horse may or may not be lame, depending on the cause of the bog. If the joint stays inflamed, swelling remains hard and tense, and arthritis may develop in the joint thus leaving the horse lame. But with most bog spavins, the injury heals and the horse is left with a soft, painless swelling. Sometimes, especially in a young horse, the swelling may disappear—if the strain that caused it was a one-time injury and not due to poor conformation.

A bog spavin bulges on the front inside part of the hock and sometimes produces two smaller swellings on each side towards the back. If any one of these swellings are pressed, the other two bulge out farther. These should not be confused with thoroughpin, in which the swelling is higher.

Thoroughpin is a puffy swelling in the web of the hock, caused by distention of the sheath that surrounds the deep flexor tendon. It is usually caused by strain to the tendon. Like a bowed tendon or bog spavin, once stretched it remains that way. Thoroughpin appears at the back of the hind leg, just above the point of the hock and about two inches in front of the Achilles tendon.

When a horse develops bog spavin, it is usually lame only if it was caused by stress. There will be heat, pain and swelling over the hock joint. If poor conformation created the problem, treatment won't help; the condition will recur. If caused by accidental trauma, the horse will usually be sound again after the joint heals. Most bog spavins heal without treatment.

Shock Wave Therapy for Bone Spavin

David McCarroll, DVM (head of Interstate Equine Services in Goldsby, Oklahoma) has been using shock wave therapy on bone spavin since 1998. His clinic was the first in the U.S. to install a shock wave machine for treating horses. Now this type of therapy is offered at an increasing number of equine clinics and hospitals around the country. McCarroll uses this therapy on many types of leg problems, but most frequently on bone spavin, with very good results.

Hock problems are less common in racehorses than in athletes that do a lot of twisting and turning on the hocks, says McCarroll, but it does occur—especially in racehorses with poor conformation that puts unnatural torque on the joints. "If you watch a racehorse from behind and he has that type of leg conformation and action—the twisting motion when the leg hits the ground—he is more vulnerable to hock injury."

Shock wave therapy seems to work best if the horse is given a week of complete rest after the treatment, then gradually worked back into training. McCarroll used to recommend 30 days of ground work after the week of rest, bringing the horse back into training within six weeks, but now feels it's not necessary to take that long.

"After the week of confinement, we give the horse one to two weeks of ground work on a hot walker, ponying, or by restricted turnout, then we put him back into race training if he's not showing any signs of lameness or soreness. The two weeks is plenty of time for the analgesia (pain relief, from the shock wave therapy) to wear off, so the horse no longer has any false sense of well-being that could mask a soreness," says McCarroll. This week of confinement immediately after treatment is very important, so the horse won't overuse the joint too soon, since he feels no pain.

"Shock wave treatment helps a

hock improve by tightening the joint capsule around the joint, making it denser and stronger, and also strengthens the attachments of the joint capsule and soft tissues to the bone. It also strengthens the subcortical bone—the bone that supports the cartilage of the joint. That type of change takes place over a longer period of time, however. It takes several weeks to months, in contrast with the two weeks of recovery needed to tighten up a joint capsule," he adds.

In a racehorse there are actually more soft tissue hock injuries than bone spavin, he says. "Thoroughpin, for instance, is not uncommon in these horses. Thoroughpin is caused by injury or tearing of the sheath surrounding the deep flexor tendon. Shock wave treatment helps this type of problem also, helping tighten up the tendon sheath."

—Heather Smith Thomas