See How He Grows

What can go wrong—and how to fix it—as your horse matures and develops

BY JENNIFER O. BRYANT

I THOUGHT ABOUT CALLING this session 'Lameness Issues in the Dressage Horse,' but then I thought: 'Bo-ring!" Tracy Turner, DVM, MS, Diplomate ACVS, told an appreciative audience at the 2002 USDF convention. "I realized that what I really wanted to do was to get you to understand what your horse is feeling."

From the number of questions fielded by eager listeners during the USDF University session, entitled "Understanding Your Horse's Pain," it was obvious that lameness problems and equine-management issues continue to puzzle riders and horse owners at all levels. Turner, a professor of large-animal surgery at the University of Minnesota College of Veterinary Medicine, St. Paul, is an event rider with a wife who rides dressage. He also happens to be an articulate and entertaining speaker who explains complex veterinary issues clearly. Here's what he had to say.

The Developing Horse

Lameness problems in the youngster and in the "prospect" differ from those in the older, schooled horse.

Babies can have structural problems that, if untreated, can effectively end their performance careers before they ever begin. From birth to two years, "The single biggest problem is what's known as developmental orthopedic disease," said Turner. "It's a series of different problems. One we call angular limb deformities (crooked legs); another we call flexural limb deformities (crooked legs in a different direction); and a third we call osteochondrosis."

An *angular limb deformity* is a disturbance of the growth of the long bone. "Typically we see this in weanlings and yearlings," Turner said. "Why? Because that's when most of the growth is occurring."

Explained Turner: "All bones start as cartilage, and cartilage is soft. The bone has the basic shape when the foal is born, but it has to elongate. It does so because the cartilage in the growth plate continues to produce new cells. But the cartilage is soft, so if it gets compressed or damaged anyplace along this growth plate, mistakes begin to happen. So, instead of having straight bone growth, it goes crooked."

Fortunately, said Turner, veterinary medicine can correct an angular limb deformity by altering the pressure on the offending growth plate so as to train the bone out of its incorrect growth pattern. To do so successfully, however, corrective action must be taken early, while the bone is still soft and growing. Have your veterinarian evaluate a foal's crooked legs early on; don't assume the baby will "grow out of" the irregularity.

In a *flexural limb deformity*, the limb may appear flexed, as in the classic "club foot." In an insidious version of this problem, the limb may appear straight, but there may be misalignment of a joint—most commonly, of the coffin joint or of the fetlock joint. As with angular limb deformities, flexural limb deformities usually begin during the young horse's first year. Coffin-joint flexural limb deformities are classified as stage 1 (less than 90 degrees) or stage 2 (greater than 90 degrees, so that the limb actually flexes in the wrong direction).

To correct flexural limb deformities, start by enlisting your veterinarian's help in analyzing your youngster's nutrition program and correcting any vitamin, mineral, or energy imbalances. Don't rely solely on feed labels.

However, good nutrition alone won't solve the problem. For a stage 1 flexural limb deformity, the next step is for your veterinarian either to functionally lengthen the too-short deep digital flexor tendon or to relax the muscle to which the tendon attaches. Doing so will allow the misaligned coffin joint to settle in its proper position within the hoof.

"Stage 2, you have to do surgery. You have no choice," said Turner. Usually, either the inferior check ligament (in somewhat milder cases) or the deep flexor tendon itself (in severe cases) is cut, and scar tissue fills in and thereby creates the desired lengthening. Ideally, of course, the developmental deformity should be noticed and corrected before it ever reaches this stage.

In a fetlock flexural deformity, the suspensory ligament (which actually is a muscle that later turns into a ligament, according to Turner) and the superficial flexor tendon also can be involved. Again, therapy begins with any necessary adjustments to the feed regimen. Therapeutic shoeing and surgery also may be called for.

The symptoms of *osteochondrosis* can mimic those of flexural limb deformities because an affected horse may flex the joint in an attempt to relieve pain. Osteochondrosis, which is a de-

velopmental disease of the joints, has been linked to heredity and diet. In Turner's opinion, it is the foremost developmental concern, particularly in warmbloods, because of their rapid growth rate and large size.

SUSAN SEXTON/GALLOPING GRAPHICS

The typical swollen appearance of a joint afflicted by osteochondritis dessicans (OCD)

There are two forms of osteochondrosis. Many breeders and buyers are familiar with the first, *osteochondritis dessicans* (OCD), in which bone under the articular cartilage fails to form (calcify) properly, resulting in an unwanted flap of cartilage and bone that never attaches properly to the joint. This weak area represents a potential problem later in the horse's working life. OCD most commonly affects yearlings and is marked by swelling in the affected joint but not necessarily lameness. It often occurs in pairs of joints. "Wobbler syndrome," which affects yearlings and two-year-olds, is a form of OCD and is caused by a problem in the articulation of the vertebrae.

Fortunately, "OCD can be treated easily with surgery, and with a very good prognosis," Turner said.

The second form of osteochondrosis is *cyst-like lesions*. These occur when a large area of bone under the cartilage fails to calcify at all, resulting in a weakened joint. When the horse begins work, the joint is insufficiently strong to withstand the demands placed on it and the cartilage can collapse.

"It's like having a hole in your drywall," Turner explained. "You can paint over it and cover it up, but if you push on it there's still a hole there." Surgery, he said, can repair the damage. Turner said he's had excellent luck in removing cysts in fetlock joints and stifles, although the joint may never be as strong as its intact counterpart.

Of course, you'd rather prevent a case of developmental orthopedic disease than treat it. One important preventive measure is not to overfeed the broodmare. Mares naturally lose weight as they lactate (nurse). Some worried owners respond by fattening her back up, which results in a extra-plentiful supply of milk for the foal. The overfed foal gets too big, too soon for his developing bones and joints to handle. Ask your veterinarian to ensure that your mare is eating the right amounts of the right sorts of things both during her pregnancy and after delivery.

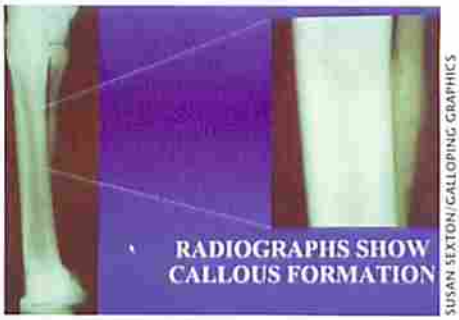
The Young Dressage Horse

From Training through Third Levels, the maturing dressage horse is gaining strength and developing the muscles needed to perform. Turner calls this the most important phase in a dressage horse's life—added reason not to push the horse too hard during this time.

During this phase, "Problems associated with weak conformation begin to show up," Turner said. Common examples are splints, hoof problems, and hock problems.

SUSAN SEXTON/GALLOPING GRAPHICS

Site of splints. Incorrect foreleg conformation, such as the crooked legs or "base wide" stance pictured here, places stress on the soft tissues and makes splint formation more likely.



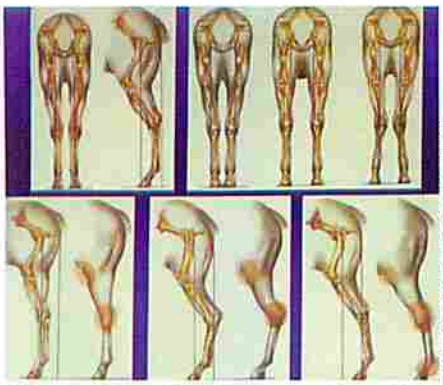
SUSAN SEXTON/GALLOPING GRAPHICS

The splint itself is callus formation (bone remodeling), as shown in this radiograph

A splint is an injury to the ligament between the splint and cannon bones of the leg, and it most commonly occurs on the insides of the front legs. The only initial symptom may be reluctance to move forward. Two to six weeks after the onset, the affected area swells and the horse is lame. A horse with crooked legs or that stands "base wide"—with "a leg at each corner"—is more likely to develop splints because of the stress placed on the ligament.

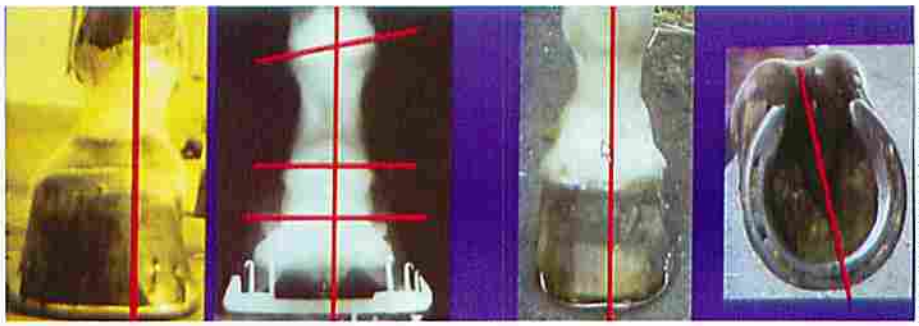
"When stress is placed on bone, the bone has to remodel; it has to change shape in order to take the stress," Turner said. "And when it does that, it becomes painful." The remodeling process also may involve the suspensory ligament, adding to the horse's pain. As the bone remodels, callusing forms. After the process is complete, the splint "sets" and is no longer painful; but it's important to get your veterinarian involved to manage the horse correctly during the formation phase so as to avoid creating other problems.

Hock problems are usually bilateral (in both joints). They're also the result of stress—usually, of being asked to carry weight behind before the joints have developed sufficient strength. A horse with hock pain may move with a short, choppy motion behind, often "stabbing" his hocks to the inside in an attempt to relieve the painful pressure. Back soreness often rears its head during this time as well, and more often than not it's secondary to the hock



SUSAN SEXTON/GALLOPING GRAPHICS

A horse with good hindquarter conformation has straight legs as viewed from the rear; and a plumb line dropped from the point of his hip touches his hock and the back of his fetlock (top left). A horse that is too narrow, too wide, or crooked behind (top right) or whose hind legs are too straight (bottom left), overly angled or "sickle hocked" (bottom, center), or "camped out" behind (bottom right) places excessive stress on his stifles, hocks, or fetlocks. Areas of stress are shaded.



SUSAN SEXTON/GALLOPING GRAPHICS

The hoof in the photo at left may appear straight, but a radiograph (second from left) reveals a misaligned fetlock joint (top red line). Likewise, the hoof in the next photo (third from left) looks straight, but pick it up and bisect it visually (red line) and a twist is revealed.

pain, caused by overuse or incorrect use of the muscles as he tries to compensate for the pain in his hocks.

"The middle-aged people here understand this concept: You don't pay for doing something incorrectly today; you pay for it later," Turner said. "Riding your horse incorrectly, on the forehand—these things show up later, as navicular disease, hock problems, all these kinds of things."

"Some of the growth problems we talked about earlier, now we start to see them rear their ugly heads in the form of hoof problems," said Turner. He showed the audience photographs of two hooves, one that appeared correct and the other, crooked. When viewed on radiographs, however, the "correct" hoof actually had a crooked fetlock joint and had simply been trimmed cosmetically straight; while the "crooked" hoof was internally well-aligned but had had a poor trim job. In either case, misalignments can lead to lameness problems because of the tremendous stresses placed on the hooves. Most such problems can be managed successfully through trimming and shoeing.

By far the largest category of lamenesses during this stage is muscular, Turner said. He described the most common sites of muscle injuries and their symptoms.

The *gluteal* muscles, which are the large muscles that run over the top of the croup, provide forward propulsion and support the horse during collected work. Gluteal pain manifests itself as mild lameness, often described as "losing the hind end" or as "stifle problems."

In humans, the *quadriceps* muscle runs along the front of the thigh. In horses, it makes up half of the hip region. The horse's hock is analogous to the human knee, and so quadriceps problems in horses manifest as "locking stifles," caused when the patella (his "kneecap") locks and can't retract. It's normally not a painful condition, said Turner, and one that's best remedied by strengthening the muscles through careful use of hill work.

The horse's *adductor* muscles move his legs toward the inside of his body, and he relies on them during lateral movements. If an adductor muscle is injured, he may stride with a twisting action to alleviate the pain. This twisting, unfortunately, places tremendous strain on the hock joints and can lead to hock problems if the muscular problem isn't caught and treated.

The horse's *shoulder* muscles extend his shoulders and also support his torso. If a shoulder muscle is injured, he may show reluctance to extend the shoulder, especially at the walk. Along with a shortened stride, he may be "girthy." Know which behaviors are normal for your horse, Turner stressed. If you do, you'll be more apt to recognize a change in movement or behavior that may signal an injury.

Muscle injuries generally aren't veterinary emergencies of themselves, but at the very least they can prevent your horse from reaching his peak level of performance, said Turner. Help prevent them by reducing the "schooling" portion of your riding sessions and increasing the stretching, warm-up, and cool-down phases. In addition, get your horse fit enough for the job; many dressage horses are unfit and overweight to boot.

"Conditioning is a form of schooling, but schooling isn't conditioning," Turner said. Conditioning exercises, such as interval training and hill work, supplement the regular ring work and build strength, fitness, and stamina to help your horse's body withstand the demands of dressage.

The "Made" Dressage Horse

From Fourth Level to Grand Prix, many horses begin to show "wear and tear"-related problems. Navicular syndrome may show up at this time as a result of years of stresses on the structures of the hoof. As with other bones, the navicular bone remodels naturally; so those

dreaded "navicular changes" on radiographs may indicate nothing other than that your horse's body is adapting to the stresses you place on it.

Many horses develop suspensory-ligament and tendon injuries during this phase in their careers as well. "These are the results of long-term microtraumas to the soft tissues," Turner explained. The trickiest part of rehabbing a ligament or tendon injury may well be the cornerstone of your veterinarian's prescription: rest. "It's a good rehab program, but rest is not the ally of the older dressage horse," he said. The reason? Older bodies tend to lose condition more quickly than younger ones, and arthritic-type stiffness is more of a problem when an older horse can't move around.

Back problems may surface (or resurface) during these years as well. According to Turner, "They can be the result of chronic stress due to improper posture or 'guarding' to minimize discomfort elsewhere.

Arthritis is the main ailment that plagues the mature dressage horse. In arthritis, the joints become stiff and inflamed. The causes vary, ranging from synovitis and capsulitis (inflammation of the joint capsule, which can lead to a deterioration of the joint's lubricating fluid), caused by working trauma and aggravated by poor conformation; to ligament damage.

"There is no cure for wear and tear," Turner said. There are, however, many products available that purport to counter the effects of arthritis in various ways, from helping the body to build new cartilage and replacing thin and debris-filled joint fluid to reducing inflammation and inactivating the enzymes that cause cartilage damage.

Of the injectable products, corticosteroids are potent anti-inflammatory drugs that can bring relief for months at a time. Turner cautioned, however, that they must be used sparingly—twice a year, max—and that overuse can lead to irreversible debilitation.

Injectable hyaluronic acid (Legend) reduces inflammation and replaces old joint fluid in much the same way that you change the oil in your car. However, Legend's effects tend to be short-lived, Turner said.

Turner spoke more favorably of injectable polysulfated glycosaminoglycan (Adequan), which binds to damaged cartilage and inactivates the enzymes that destroy cartilage and the joint membrane and fluid. Still, he sees a place for both Legend and Adequan in some horses' management program. "I tend to use Legend early on to counter inflammation, and Adequan later for [treating] cartilage damage," he said.

Besides Adequan, which is administered via intramuscular injection, there is an oral form of glycosaminoglycan (GAG), the best-known of which is Cosequin, although there are dozens of competing "nutraceuticals" on the market. Cosequin's beneficial effects have been documented in clinical trials; recently, McPhail Dressage Chairholder Dr. Hilary Clayton conducted a study that showed similar benefits to the oral joint supplement Corta-Flx ("Veterinary Connection," January). Other products' effects are less well known, Turner said. If you decide to try an oral GAG, know that "glucosamine is the most important ingredient." However, not all manufacturers use the same grade or amount of glucosamine in their products, so read labels carefully, he added. And resist the notion that if one supplement is good, more are better. "We don't know how all these products interact," he warned.

Lameness Prevention

There's no substitute for letting horses grow and develop as Nature intended: a normal rate of growth in foalhood, slow and careful training to allow muscles and bones to strengthen and adapt gradually to the demands placed on them, and an active lifestyle with plenty of conditioning work and turnout time. Add to those the selection of a horse whose conformation minimizes his chances of suffering stress-related injuries and the best veterinarian and farrier you can find.

"The horse has an amazing ability to heal," said Turner. Despite everything we throw at our mounts—less-than-perfect riding, the demands of shipping and competition, iffy footing—many remain remarkably sound and enjoy long and active careers. With careful management during your horse's early years, you increase the odds that he'll be one of the success stories. ▲

MEET THE PRESENTER

Tracy Turner, DVM, MS, Diplomate, ACVS, is a professor of large-animal surgery at the University of Minnesota, St. Paul, and speaks internationally on lameness topics. His primary area of research is equine lameness, specializing in equine podiatry and thermography. He is on the Executive Board and serves as secretary of the Association of Equine Sports Medicine and is on the Board of Directors of the Minnesota Horse Council.

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