

Should you inject the hocks? By Dr Chris Bell

Injection of the hocks is one of the most common joint therapies that is performed in sport horses of all disciplines. Sometimes this is medically warranted and sometimes it is simply done as part of a 'maintenance' program. Whatever the reason you chose to inject your horse's hocks, it is important to understand the risks and benefits of this common procedure.

To understand why the hocks are being injected, we need to go back to the basic anatomy of the horse and the development of conditions within the joints that will benefit from injection. The hock is composed of several joints. The large upper joint called the tibiotalar joint is the joint responsible for hinge-like motion of the hock. In this joint the end of the tibia (large bone above the hock) slides along a groove in the talus bone. This area of the joint is completely covered in cartilage and the joint has fluid within it to allow for lubrication of the cartilage ended bones against one another. Immediately behind the talus is the calcaneus bone. There is a low motion joint between these two bones. This joint has fairly minimal effect on the motion of the hock overall and communicates with the tibiotalar joint in front. Immediately below the upper high motion joint are three small joints stacked on top of one another. The uppermost joint is called the proximal intertarsal joint. It communicates directly with the tibiotalar (upper high motion joint). There are a row of small bones and then the next joint down is the distal intertarsal joint (DIT). Finally, there is a second row of small bones and then the lowest joint, the tarsometatarsal joint (TMT). These joints all have anatomical names based on the bones above and below each.

Fig 1. Annotated Hock Joints



The two lower joints (DIT & TMT) will be the focus of the discussion as these are the joints that develop arthritis most commonly and where the injections are placed. The lower hock joints (DIT & TMT) play a minor role in the overall performance to the hock motion. The main function of these joints is pivoting of the lower part of the hock joint in a single plane. The small bones of the lower hocks rub back and forth against each other as the hocks transfer the torque of the lower limb into torque of the upper limb. They don't open and close like you would think of a hinged joint or high motion joint. The trouble comes when these low motion torqueing joints begin to lose the thin layer of cartilage between them. Cartilage covers all the bone surfaces within these joints to start. As a horse ages and works the hocks, the cartilage can start to breakdown and is eventually lost. The process of this cartilage loss results in inflammation of the joint – this is called arthritis; Arthro – joint, itis – inflammation.

When cartilage breaks down, there are molecules released that irritate the joint capsule and surrounding cartilage. As these molecules increase in number and variety, a vicious cycle can become established and arthritis progresses. When some of these molecules reach the nerves of the joint capsule and collateral ligaments and even within the bones, the horse experiences pain and we see lameness develop in their gait. The lower hock joints tend to be most affected for a couple reasons; their motion tends to be a grinding back and forth motion as opposed to a hinged joint and the cartilage is thinner than the high motion joints and many of the more advanced movements for our sport horses require them to turn off their hind end. The motion through the hind end can put stress on the lower hock joints.

Once arthritis has begun, it is irreversible. The veterinarian tries to minimize the disease effects on the horse. The goal is to maintain comfort for the horse while they perform their job. The options for establishing that comfort level for the horse are varied but a skilled equine veterinarian can help to ensure that the right choice is made for each case.

Establishing a proper diagnosis is key. This usually involves a thorough lameness exam. The exam includes a flexion test where the vet holds the horse's hind leg up so that the cannon bone is parallel to the ground. This position is held with the hock in flexion for 30-90 seconds. The limb is released and the horse is trotted off away from and towards the veterinarian. If there is arthritis of the hock, the horse will usually display a distinctive lameness as he is traveling away from the veterinarian. As a side note, the hock flexion test is not 100% specific for just the hock. In the hind limb of the horse, there is a stay apparatus or a ligament that connects the fetlock, hock and stifle such that flexion of the hock alone is not possible. By default, when the hock flexion is performed, there is also some flexion stress placed on the fetlock and the stifle. A skilled equine veterinarian can usually rule out the stifle and fetlock from the equation.

A joint block or nerve block may also be performed to determine the exact source of the lameness. A 'block' is where an anesthetic agent (similar to what the dentist uses to numb a person's jaw) is placed around the nerves or within the joint that is the

suspected cause of lameness. If the horse goes off sound, then the lameness has been localized to the spot that is numb.

Once the hocks have been identified as the source of the lameness, radiographs (x-rays) are taken of the hocks. In the case of arthritis, there may be bony spurs and extra calcification around the margins of the joint. The changes in the bone are best explained by considering the physiology of how the body tries to minimize joint pain. For the horse's body, joint pain can be successfully managed by standing still or not moving the joint as much. The bones around a joint take this concept a step further. If no motion is good, then the bone begins to try to stop the joint from moving by laying down more bone to bridge the joint. Once the joint is bridged with bone, it will stop moving. This occurs within the joint (difficult to see on x-rays) and at the margins of the joint (what we see as 'bone spurs' on x-rays).

Treatment should always begin with the least invasive option. Currently, the primary recommendation for hock joint arthritis is rest (low intensity exercise) and anti-inflammatories such as Phenylbutazone (Bute) or Firocoxib (Previcox, Equioxx) being commonly used. If there is no improvement with anti-inflammatories and low intensity exercise, then the next progression is usually to perform joint injections. The goal of the injection is to decrease the inflammatory mediators (molecules) being produced by the damaged cartilage. If we can decrease the molecules, then there is a decrease in the pain and improvement in the horse's comfort. The injections consist of a corticosteroid which is a strong anti-inflammatory drug. This medication, when placed directly into the joint, decreases the molecules produced for 3-9 months on average. It generally takes between 5-15 days for the medication to have a therapeutic effect such that you observe the difference.

Another type of injection into arthritic hocks would be something called IRAP (Interleukin-1 receptor antagonist protein). This is a type of biologic disease modifying agent used to treat arthritis. Interleukin-1 is one of those inflammation molecules discussed earlier. It is present in high levels in arthritic joints. Once injected into a joint, the IRAP binds the inflammatory interleukin-1 molecule and prevents inflammation. IRAP works similar to the idea of a sponge – once the sponge is fully saturated, any additional solution (inflammation) cannot be blocked. The period of time it takes to saturate the IRAP depends on the amount of inflammation in the joint. Some IRAP treatments last months and others only for a week or two.

If all medications and biological agents fail to resolve the lameness, then the final option is to fuse the lower hock joints. By fusing the joint, the motion is stopped and thus the pain and inflammation is stopped. A newer development in the management of chronic arthritis in these joints is called alcohol fusion. This is a process where a small amount of sterile, high percentage alcohol is injected into the lower hock joints. The alcohol kills the cartilage cells and deadens the nerve endings in the joint and joint lining. The horse becomes sound very quickly and does not require general anesthesia (in most cases). Second, the cartilage tissue dies and the bones come into contact resulting in fusion of

the joint and resolution of pain. The fusion process takes about 4-12 months to complete but the horse will generally remain sound throughout. This type of hock fusion is relatively new but the results have been very positive so far for most horses.

Hock injections are often discussed casually as part of a maintenance program for your horse. Although hock injections are relatively routine to perform, there are many options to be discussed and with a more thorough understanding of the background reasons for performing the injections, we can all work together to ensure that your horse is getting the best care possible.

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