Chronic irritation and inflammation within a joint ultimately results in the development of degenerative joint disease or osteoarthritis (OA). In turn, OA can cause chronic pain and deterioration of horses' athletic careers and quality of life. Such animals will require OA management (e.g., non-invasive therapies).

"Joints are designed for frictionless motion," Hunt adds. "The opposing bones within a joint are like a lock and key, and the second is that the chip can potentially irritate the joint and cause inflammation or degrade the articular cartilage.

"Osteochondral 'chip' fragments are common in athletic horses, especially racehorses," says Robert J. Hunt, DVM, MSc, Dipl. AVCS, surgeon at Hagyard Equine Medical Institute, in Lexington, Kentucky. "With proper management, chips do not have to be either the career end or a shattered future." Why Does Bone Chip?

Horse's bones might seem like rods of steel, but even steel has its breaking point, as we learned from the Titanic. Theoretically, chips can fracture off the edge of any bone, but veterinarians see them most commonly in specific locations:

- The sesamoid bones, either of the fetlock or the navicular.
- The third carpal bone (these can be simple chips or full slab fractures, in which the fracture extends completely through the bone).
- The proximal (between the two rows of carpal bones), and distal (between the second row of carpal bones and the cannon bone) pastern bone) in the fetlock; and
- The third carpal bone or the navicular bone on the front of the fetlock joint.

Benefits to standing surgery, in general, are that it permits the horse to be treated as an outpatient with lower care and anesthesia costs and shorter procedure length because there is no need for acting general anesthetic.

Conservative options include either ignoring the problem if the chip does not cause overt lameness, or using anti-inflammatory drugs, nutritional management, chips do not have to be either the career end or a shattered future, as we learned from the Titanic, with proper management.

Surgical Options: Present and Future

"In general, I believe a better job and faster job can be done with the horse not moving under general anesthesia," Bertone says. "Patients have a better recovery time, less pain, and are able to return to normal activity sooner. In addition, the horse can potentially return to racing conditions sooner. Rarely, horses can develop complications following recovery from general anesthesia, so surgeons have been looking for ways to perform some orthopedic surgeries in the sedated, standing horse (e.g., chip fractures in the lower joint of the knee).

Veterinarians have a number of ways to diagnose even the smallest of fragments. After conducting a physical and tissue diagnostic tool, ultrasonography is useful for diagnosing chip fractures.

Surgical removal of chips is not a usual procedure. However, veterinarians have determined that some fractures aren’t so terrible. Research, and improved imaging technology, veterinarians have determined that some fractures aren’t so terrible. It wasn’t so long ago that mention of a broken bone in a horse was the end of his career, but now, veterinarians are able to surgically remove these chips, and the horse can return to his former self.

Chips range from small to large, and come in single or multiple pieces. They can fragment off the bone and into the joint, or they can remain stuck in the bone. There are three main causes of chip fractures:

- Microdamage: When a bone is subjected to repetitive stress, it can cause small cracks to form within the bone. If the stress is severe enough, the crack can propagate and result in a chip fracture.
- Fatigue fracture: When a bone is subjected to cyclic stress, it can cause small cracks to form within the bone. If the stress is severe enough, the crack can propagate and result in a chip fracture.
- Pathological fracture: When a bone is subjected to abnormal stress, it can cause small cracks to form within the bone. If the stress is severe enough, the crack can propagate and result in a chip fracture.

Horses with severe lameness, sudden onset of heat, pain, fluid accumulation within the affected joint, and lameness are suspected of having chip fractures.

Veterinarians have a number of ways to diagnose even the smallest of fragments. After conducting a physical and tissue diagnostic tool, ultrasonography is useful for diagnosing chip fractures.