

3D Systems and Rita Leibinger Medical Get Disabled Dogs Back on their Feet Fast

Over 10,000 dogs have received the revolutionary orthopedic TTA RAPID™ implant, printed by 3D Systems Direct Metal Printing (DMP) and designed by Rita Leibinger Medical.

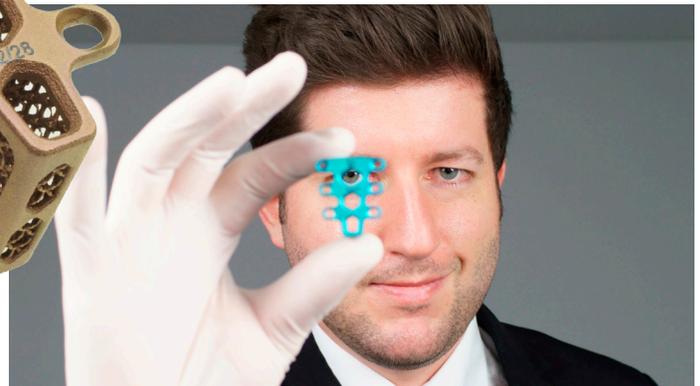
Since 2012 3D Systems and Rita Leibinger Medical, a German innovative veterinarian medicine company, have collaborated to develop a revolutionary orthopedic knee implant for dogs: TTA RAPID. These small, precise 3D printed titanium implants have been implanted successfully in nearly 10,000 dogs diagnosed with cruciate ligament problems, ranging from Jack Russells to Great Danes. In a matter of weeks the dogs were able to walk, run and play as if nothing ever happened—a stark contrast to the extensive recovery required in traditional procedures. “The new TTA RAPID implants drastically simplify today’s surgical procedure on hind legs to restore the dogs’ movements by providing much better and permanent stifle joint stability,” says Peter Mercelis, Technology and Application Development Manager for 3D Systems.

Putting a spring back into dogs’ steps

“It is heartbreaking to see your dog in pain and hardly able to walk,” says Gordon Buschle, Marketing Manager for Rita Leibinger Medical. Disabled dogs are often diagnosed with a failure of the cruciate ligament, which results in instability of the stifle joint. The stifle joint connects the thigh bone to the two lower leg bones in the dog’s hind legs; it’s the equivalent of the human knee. Cruciate ligament failure typically has a traumatic, degenerative or genetic cause, and the unstable stifle joint that results usually decreases the dog’s range of motion considerably so they have trouble running and even walking.

But the TTA RAPID (Tibial Tuberosity Advancement), enabled by the speed and accuracy of 3D Systems’ Direct Metal Printing, is yielding impressive results, illustrated by the thousands of dogs that have been treated successfully. The key to this groundbreaking implant’s success is its complex, open structure, which could only be created using 3D printing. Printed in titanium, this structure promotes rapid bone ingrowth for greater stability and a much faster recovery. Dogs are under anesthetic for less time and experience fewer infections than with previous procedures.

“The veterinary surgeon makes a precise partial cut in the tuberositas lower leg bone,” explains Buschle. “Then the surgeon inserts the correct size of titanium implant into the cut to serve as a wedge. This modified bone shape indirectly reorganizes the mechanical forces in the stifle joint to create dynamic knee stability. As such the TTA RAPID enables the dogs to walk around and run freely only six weeks after surgery.”





Critical 3D printed titanium implants

Mercelis explains: "Series of TTA RAPID implants are manufactured directly from titanium powder using Direct Metal Printing (DMP) technology. The implants come in multiple sizes to accommodate surgery on any size of dog. The implant sizes are easily recognized through color-coded implant anodization."

Yves Samoy, post-doctoral assistant, Orthopedics at the Department of Veterinary Medical Imaging of the University of Ghent, Belgium, was involved early on in the development and application of the TTA RAPID implants. "The major advantages," he says, "of the new titanium implant are its shape and strength as well as the relatively straightforward surgical procedure. I regularly implant TTA RAPID in dogs between 5 to 85 kilograms and obtain a high surgical success rate and very good orthopedic results." Highly dependent on the ability to pack maximum complexity in a small package, the implants form an accurate and stable element in the bone that radically increases the dog's long-term range of motion.

Huge cross-discipline market potential

"One year after the commercial launch, nearly 10,000 TTA RAPID devices have been implanted," Buschle concludes. "We see huge potential for TTA RAPID to restore movement of many dogs suffering from cruciate ligament injuries. The success of TTA RAPID implants led to the development of similar implant types for other medical applications, for example the new line of TTA RAPID petite implants, which were specifically designed for cats and toy dogs."

TTA RAPID is a patented technology from Rita Leibinger GmbH in Europe and is patent pending in the USA.



patent pending

