



San Carlos Veterinary Hospital (SCVH)
 8618 Lake Murray Blvd.
 San Diego, CA 92119
 (619) 460-3100
 www.sancarlosvet.com

- Dr. Dean R. Gahring, D.V.M; Diplomate, ACVS
 - Dr. Bruce N. Persky, D.V.M.
 - Dr. Stanley P. Kus, M.S., D.V.M.
 - Dr. Laurel Nishida, D.V.M.
- E-mail: info@sancarlosvet.com

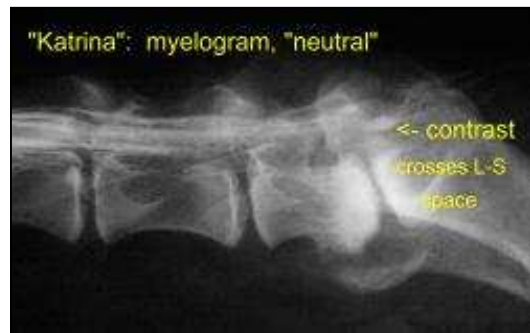
“Katrina”- Cauda Equina Syndrome, Lumbosacral Fusion

“Katrina” is an 11½ year old spayed female Husky mix. She was presented with a history of crying, even screaming, when she would get up from laying down, especially in the mornings. Over the previous three weeks she seemed to get better once she was up and had exercised. She began getting worse about nine days before presentation, and started chewing on her right rear paw. Our examination revealed some lower back (thoraco-lumbo-sacral) tenderness. Radiographs of the spine showed marked spondylosis (bony bridging) of the L7 – S1 (lumbo-sacral, or L-S) disk space, with extensive sclerosis (increased density of bone) of the vertebral end-plates, and narrowed disk space. These symptoms indicated a likely disk extrusion (“slipped disk”). Our suspicion was that this was the likely cause of the pain, in certain positions of the lower spine, whereby occasional nerve impingement occurred (Fig. 1).



Figure 1. X-radiograph showing spondylosis of the disk space between the L7 - S1 vertebrae.

A myelogram was performed to determine if there was spinal canal impingement, and if this occurred in some or all positions of the lower spine. The myelogram (a diagnostic technique whereby contrast is injected into the spinal canal that shows up readily on radiographs) showed loss of contrast across the L-S disk space when the pelvis was maximally extended, but did cross when the pelvis was in neutral or flexed position. This suggested that the pain from nerve impingement occurred in pelvic extension movements (Figs. 2, 3, 4).



Figures 2 & 3. Myelograms showing minimal loss of contrast when the spinal column was in the neutral (top) and extended (middle) position.

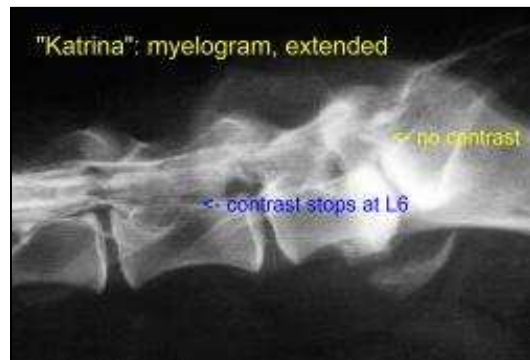


Figure 3

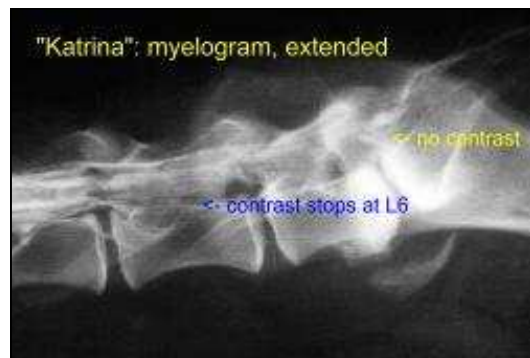


Figure 4. Myelogram showing loss of contrast material when the spinal column was in the flexed position.



"Katrina" cont.



The treatment was to fuse the L-S spine in a neutral position, so it could no longer move into a position to cause nerve impingement. This was accomplished by positioning the spine/pelvis in a neutral position, placing lag screws across the articular facets (bony prominences that make up the joints between the vertebrae), then wedging a cortico-cancellous bone graft, taken from the right iliac wing (of the pelvis) between the dorsal spinous processes of the vertebrae (Figs. 5, 6, 7).



Figure 5. Post-operative ventro-dorsal X-radiograph showing screws and bone graft used to fuse the Lumbo-Sacral spine in a neutral position.



Figures 6. Close-up of the same view shown in Fig. 5.

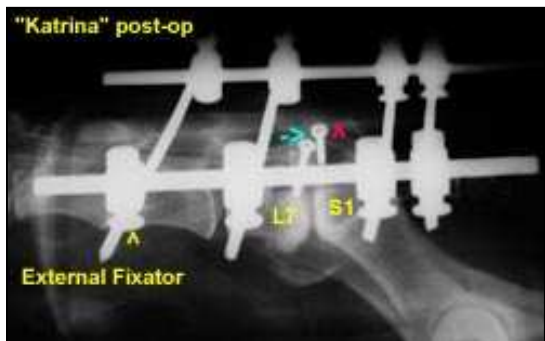


Figure 7. Lateral view of the same area shown in Figs. 5 & 6. Note screws (blue arrow) and bone graft (red arrow).

Additional bone graft was added around the pelvic cortico-cancellous graft with both cancellous bone from the ilium (which was not enough to fill the space) and a new bone graft material called OrthoVet™. OrthoVet is a combination of species-specific Demineralized Bone Matrix (DBM) and cancellous bone in a reverse phase medium. It has both osteoinductive and osteoconductive properties. This product comes in a medium that works like putty, but hardens as the temperature increases. It is very easy to use and is very malleable, and added tremendous volume of bone graft to help enhance the bone healing. The entire surgery was protected with an external fixation device, which involved pins passed through the skin, into the dorsal spinous processes of the vertebrae, and out the muscle & skin on the other side. All the pins were connected with special clamps and connecting rods. This apparatus will be removed about two months after the surgery, once the bone graft solidifies and becomes the permanent “anchor” holding the vertebrae from moving. The lag screws will remain permanently (unless a problem develops with them).

An additional problem was noted. Katrina had very strong-smelling urine. Culture revealed E.coli bacterial infection. Since she has been on appropriate antibiotic therapy, she has improved significantly. Follow-up visits have shown that Katrina is walking normally, has not had a single episode of pain like she experienced before the spinal fusion, and all the implants did very well.



Figure 8. Katrina, Jan. 11, 2001 lateral view showing bone graft (yellow arrow). Note the disk space and that the relationship between the L7 and S1 vertebrae is well maintained (red arrow).



Figure 9. Katrina, Jan. 11, 2001 ventral-dorsal view showing bone graft (yellow arrow)