

Perspective 82

The Art of Veterinary Practice



Guest Editor
Aine Seavers

Authors

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The CVE is grateful to Aine Seavers (pictured here with 'Hercules') for collaborating with the multiple authors involved to together produce this wonderful Perspective.

'The two great evils of life are ignorance and pain' and so one must always do whatever one can to combat both.

Henry Jacob Bigelow

'If you have an apple and I have an apple and we exchange these apples then you and I will still each have one apple. But if you have an idea and I have an idea and we exchange these ideas, then each of us will have two ideas.'

George Bernard Shaw

(quotes courtesy of Damian Donohue, Ireland)

What applies to **ideas** applies also to **information**. Some people believe that 'information is power', but they are only half right. Information does not become really powerful until it is shared.

Educating the reflective practitioner

'In the varied topography of professional practice, there is a high, hard ground overlooking a swamp. On the high ground, manageable problems lend themselves to solution through the application of research-based theory and technique. In the swampy lowland, messy, confusing problems defy technical solution. The irony of this situation is that the problems of the high ground tend to be relatively unimportant to individuals or society at large, however great their technical interest may be, while in the swamp lie the problems of greatest human concern. The practitioner must choose. Shall he remain on the high ground where he can solve relatively unimportant problems according to prevailing standards of rigor, or shall he descend to the swamp of important problems and non-rigorous inquiry?' (Schon, 1987).

Reference. Schon, D.A.(1987). *Educating the Reflective Practitioner*. Jossey-Bass Publishers. San Francisco.

MAJOR WINNER

Perspective 82 – No.1 Homemade, inexpensive yet very effective fixateurs

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Grahame graduated in 1971 and has worked in Small Animal practice ever since, based in Epping, NSW. Grahame always kept his engineering interest going as a counter irritant to Vet Science and still enjoys practice. He says he is lucky to have had excellent staff working with him over those years who keep everything under control.

CASE 1.

Repair of a compound comminuted tibial fracture in an eastern grey kangaroo

'Jojo', a pet 6-month-old eastern grey kangaroo) was presented in a sorry state unable to walk with an overriding compound comminuted fracture of the tibia. An anaesthetic of acepromazine, isoflurane and nitrous oxide was given and alamycin (LA tetracycline) was given IM.

The leg was skin prepped, a contaminated fragment of bone removed and the wound opened further to allow drainage. ►

Proximal and distal 2mm pins were inserted at a small angle to the bone axis, bent to give purchase on a cortex and traction applied until alignment was corrected.

Central pins were similarly used to apply a smaller opposing force for stability.

On recovery the patient was able to stand and walk on the foot with no apparent discomfort or concern. No pain relief was given.

After 1 week he was weight bearing on the toes and made a full recovery after removal of the fixateur 6 weeks after surgery – see pics below.

The 6-week progression of Jojo the kangaroo

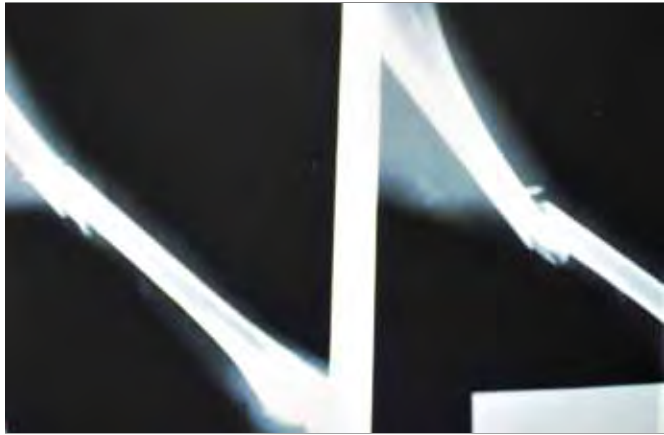


Figure 1. Radiograph of comminuted tibial fracture.



Figure 2. After external fixation.



Figure 3. Oblique.

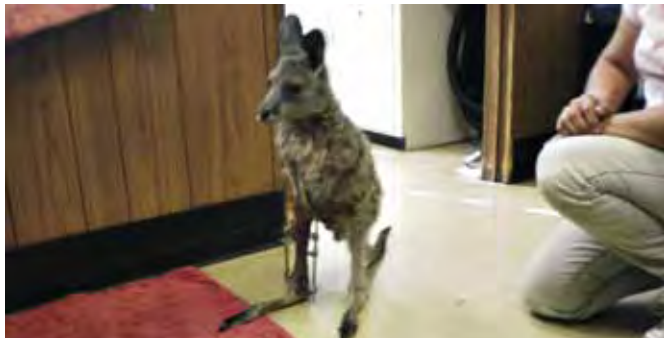


Figure 4. Post op 30 min.



Figure 5. Post op 30 min.

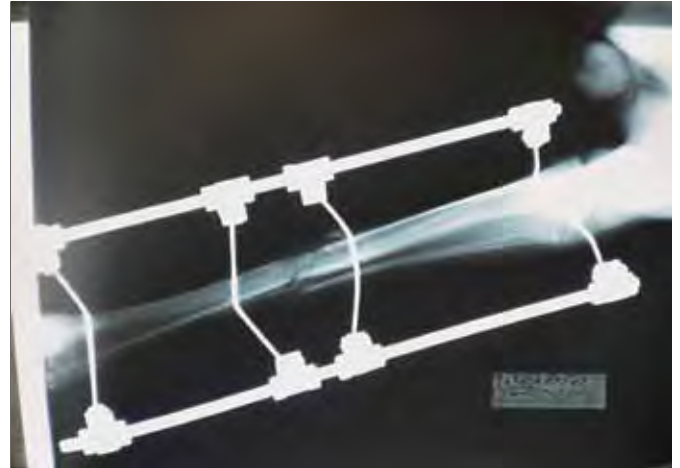


Figure 6. Jojo at 2 weeks.



Figure 7. Jojo at 4 weeks.



Figure 8. Jojo at 4 weeks.

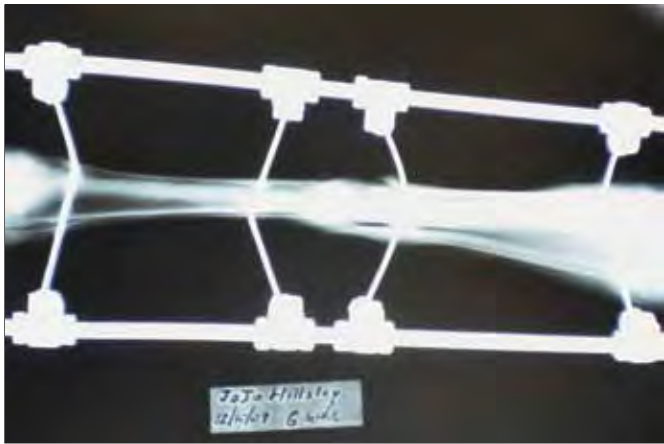


Figure 9. Jojo at 6 weeks.

Watch 'Jojo' in action!

Grahame has generously allowed CVE to post his video of 'Jojo' on the public pages of the C&T Series section of our website www.cve.edu.au

'The roo was a compound comminuted tibial fracture and walked 30 minutes post op and started hopping 3 weeks post op. There was a significant bone deficit as I removed contaminated bone and set with a gap. The video is 6 weeks post op on the day of removal and the sound is impressive. All in all – a very simple fix.'

CASE 2.

Repair of a re-broken tibia in a dog

A second case was an exuberant 25kg crossbred 7 year-old dog presented with a re-broken tibial fracture a month or so after having a fixateur removed. 'Tim' had hung himself in a fence some 9 months previously and extensively damaged bone and soft tissue. A poor prognosis was given due to muscle atrophy and decalcification. Using a distracting fixateur, the bone was put in traction and being an oblique fracture in lateral compression, traction force was applied to the end pins and a compression force applied to the 2 parallel pins either side of and parallel to the oblique fracture, thus compressing it. The spring tension can be seen in each k wire (pin). No attempt was made to curette the fibrous scar tissue at the fracture site until muscle regeneration was evident. Distraction and lateral compression was adjusted every 3 or 4 weeks in a consult to maintain tension and function. The pins were repositioned as they dragged near the fracture site or joints.

The patient had use of the leg and development of muscle but Xrays showed no callus formation after 3 months so a 50mm section of crushed rib was inserted into 6mm holes drilled into the fibrous fracture area. A workshop drill was ground with 10 degrees of relief and no chisel point for an easy cutting action and sterilised for the purpose.

By 6 months the muscles had fully regenerated but calcification of the fracture line was absent and the graft repeated. At 8 months post op we noted 'running, jumping, leaping and standing on hind legs almost as normal' but calcification was inadequate so cancellous bone was grafted into the fracture zone. Interestingly we noted 'solid calcified tissue removed from fracture line' but Xrays indicated inadequate calcification.

By 13 months the calcification appeared adequate and the fixateur was removed with no further problems in the 8 months since.

Minimal antibiotics were used; infection of the pin tracts seems never to occur probably because they are essentially open draining wounds.

All this sounds tedious but the patient was affectionate, happy and fully mobile throughout the episode and as usual totally unconcerned by the episode. ▶

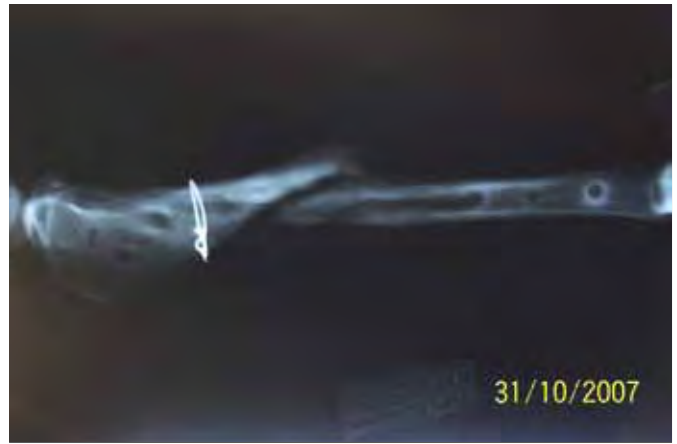


Figure 1. 'Tim' as presented.



Figure 2. Axial distraction and compression across the fracture line. (Note: This image was taken after Fig 1 but due to a camera problem has been incorrectly labelled.)



Figure 3. Almost full use; Tim could dance on his hind legs and leap into his car.



Figure 4. Only the oblique showed inadequate calcification.

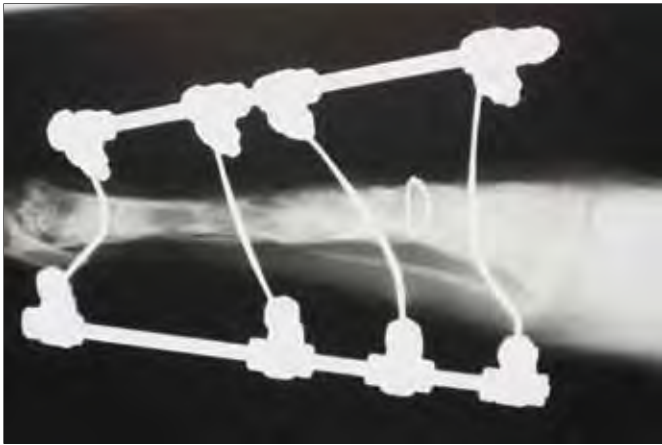


Figure 5. Healed 12 months post application.

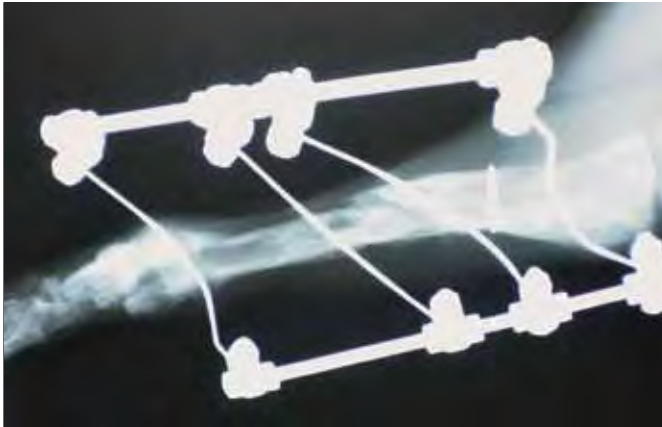


Figure 6. Xray shows fully functional healing which had held for 8 months so author expects no problems.



Figure 7. Timmy after pin removal with a fully functional – if not pretty – bone.

CASE 3.

Repair of a badly comminuted fracture in a rottweiler

A third case, for which we have no Xrays, was a badly comminuted fracture in an aggressive 65kg middle aged rottweiler with an uncooperative owner.

A 5mm IM pin was inserted into the end fragments with central fragments threaded on where possible. The proximal protruding end was joined to an external 3/16th inch bar bent to run parallel to the femur. A 2mm half pin was put through the condyles, bent over 90° medially for 12mm or so and pulled back to the medial condyle then the lateral end bent distally at 45° to connect to the external bar. Two half pins were inserted proximally

at a shallow angle into the lateral trochanter. This allowed distraction and prevented rotation. No contact was made with the client until he came back 3 months later to have the pins removed. The reason given for lack of contact was that as the dog was walking normally he couldn't see the need for weekly re-checks and he wanted to give it extra time to heal.

CASE 4.

Repair of fight-induced fracture in a Schnauzer

'Tilly' was a 12-year-old Schnauzer presented with a 4-day-old overriding fracture of the right foreleg with extensive soft tissue damage from a fight with a bull terrier.

A distracting fixateur was used to correct the overriding and provide stability for wound management. Overextension evident in the second Xray was easily measured and corrected.



Figure 1. Tilly before removal at 6 weeks.



Figure 2. Initial Xray after the dog fight.



Figure 3. Pins (1.6mm) applied through traumatised tissue with minimal iatrogenic trauma giving stability and allowing immediate use of the leg.

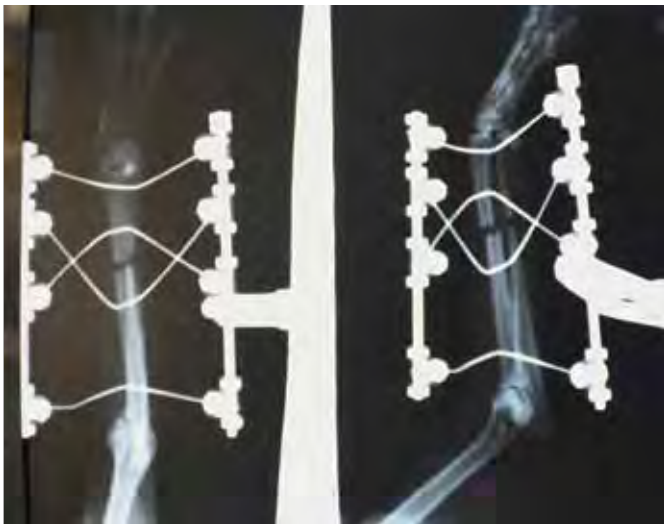


Figure 4. Overcorrection was measured and corrected using the threaded rods 1mm pitch. The bone is in traction and each fragment is in traction. Slight overextension we would not have worried about.



Figure 5. Tilly, 4 days post op with swelling reduced and infection under control.

CASE 5.

Overriding fracture in a 4-year-old retriever

Jessie's recovery was complicated by atrophy of the supraspinatus muscle presumably from cervical nerve root damage. The recovery and regeneration of the muscle was probably assisted by the fact that she could otherwise use the leg normally.

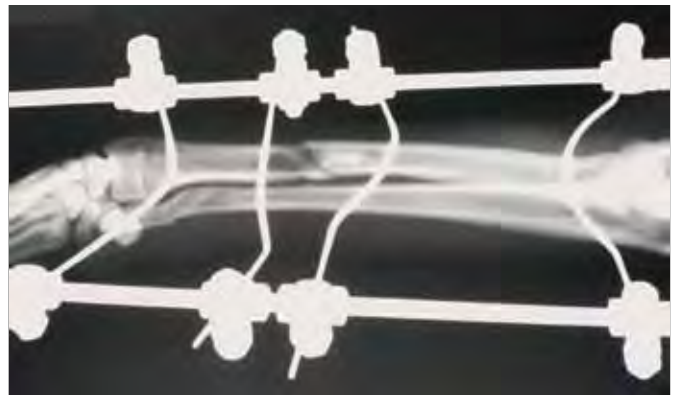


Figure 1. This was a 4-day-old, 20mm overriding fracture in a retriever. 2mm bent pins were used to apply force where needed. (Jessie & Tilly's fixateurs were removed at 6 to 7 weeks, healed.)

Discussion

Fixateurs are a cheap, easily fitted and infinitely reusable device and should be considered as an effective first option for stabilising difficult fractures. The only sterile part of surgery is the pin insertion and they can be adjusted thereafter at leisure, usually in a fully conscious patient. They can usually be removed after 6 to 8 weeks with a supported RJ bandage applied for another 3 weeks.

The fixateurs used in these cases were designed for effortless reduction of difficult fractures in heavily muscled dogs. They provide immediate stability and function of the leg with minimal iatrogenic trauma and use 2mm full or half pins (Kwire) on up to 65kgs dogs.

Smaller sets use 1mm or 1.6mm K wires for smaller patients.

Editor's Note: *Grahame can't understand why this technique illustrated in the 5 cases above is not used more because it is so easy and cheap. He believes that it's not a second rate fix by any means and he never has problems with infection and only use antibiotics for a few days post operatively. They are home-made, inexpensive fixateurs – originally designed for correcting overriding fractures in heavily muscled greyhounds – and the only sterile surgery is a 20 minute insertion of pins in the intact bone extremities.*

Graham notes that the fixateurs can be made for any size patient and all species.

Purchase a set

Grahame is selling these fixateurs for \$440.00 complete which includes pins and tools. Everything apart from the pins (\$26.00) is reusable. Designed as powerful distractors of overriding fractures they are easily adjustable for length, angulation and rotation at surgery or post op in a consult while healing.

How to order a set

If you are interested in ordering a set, or would like to find out further details, please contact Grahame by email: gdbaker@midsonrdvets.com or telephone (02) 9868 2055.



Figure 1. Grahame uses 3 sizes: 1mm, 1.6mm and 2mm pins which can accommodate any size patient, once the weight of the patient is established.