



February 2007

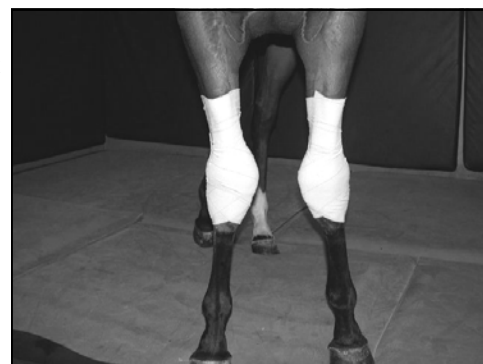
Previous VET NOTES

- January 2007 - The dental health of young performance horses
- December 2006 - Neonatal Isoerythrolysis in foals
- November 2006 - Upper respiratory infections of young Thoroughbreds in training
- October 2006 - Eastern equine encephalitis—time to vaccinate!!
- September 2006 - Gastroscopy
- August 2006 - Rhodococcal pneumonia
- July 2006 - Managing limb deformities in foal with dynaslants
- June 2006 - Disaster preparedness
- May 2006 - Mare reproductive loss syndrome (MRLS)
- April 2006 - Exercise-induced pulmonary hemorrhage
- March 2006 - The use of high speed treadmill to diagnose upper respiratory tract disorders
- February 2006 - Common medications used to assist breeding, cycle regulation and pregnancy maintenance of the mare
- January 2006 - Managing high risk pregnancies
- December 2005 - Affording the unhealthy horse

Single screw compression V. Screws and wire (transphyseal bridging)

We have now been using the single screw technique to correct angular limb deformities for about 3 years while the use of screws and wire for transphyseal bridging has been done for about 25 years. I want to share some of that experience with you so that you can make the best decision if your horse or foal needs some correction.

What are the pros and cons? Both procedures are based on the well established fact that compression of one side of a growth plate will stop growth on that side, allowing the other side to catch up. In most cases this compression needs to be temporary because over correction will result if the implants are not removed when the leg is corrected. The only time over correction is not a problem is when we are trying to correct a bone that is about finished growing in length. An example is when we are asked to correct a fetlock on a foal that is more than 2-3 months old.



Transphyseal bridging (screws and wire) certainly works well on knees and fetlocks. It works a little slower because the bone needs to grow against the apparatus to apply more pressure than was applied at surgery. As explained previously, the apparatus must be removed when the leg is straight, otherwise it will over correct. However, I have never seen it cause a straightened leg to over correct after it was taken out. In other words, it does not cause a prolonged cessation of growth on that side of the growth plate. Over the years there have been very few foals that were allowed to over correct when screws and wire were applied, but most of those foals came back to normal without needing a second surgery. In-

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fection is obviously never desirable especially when implants (foreign bodies) are present, but I have never seen infection around screws and wire cause a serious problem. We have generally treated them (mostly foals) with antibiotics; left the implants in place until the leg straightened and then removed the implants. No serious bone or growth plate infection has ever occurred. Screws and wire take more time to put in (obviously more implants) and take out and will likely cost more for the combination of application and removal than the single screw technique.

The single screw technique also works well most of the time. It typically corrects any deformity faster. It certainly is preferred if there is significant deformity on a growth plate that is about to stop growing. Probably the biggest and most controversial reason for using the single screw technique is cosmetics. Cosmetics, like beauty is in the eyes of the beholder. At the time of screw removal, the single screw technique results in a smaller, but usually more discreet bump while screws and wire result in a broader more rounded bump. I think there is probably little difference if the animals are compared about 2 months post implant removal. What do you think?

If infection occurs with this technique, it can be a major problem because the screw traverses the growth plate. Luckily, we have not had a major problem in any of our cases, but we know of a few horses that have been lost because of infection involving the growth plate. Based on what we have seen, I would take out the single screw immediately, if infection around the screw occurred.

Although not common, the most aggravating problem with the single screw technique has been over correction. We have seen yearlings that over corrected a little, at least partly because the correction occurred quickly, the screws were removed and they continued to over correct. Second surgeries on the opposite side have met with mixed results I think because the horses were ready to stop growing by then. Past surgical principles dictated that we did not want to injure the growth plate by applying screws across a growth plate, whether they were part of transphyseal bridging or fracture repair. Certainly we never like to see fractures that involve a growth plate as it is known that angular deformities may result. This principle is the reason that single screw compression was not done previously. Obviously this principle can be ignored most of the time as the damage to growth plate is not significant enough to fuse it. However, this is the reason for the continued correction resulting in over correction when the implants are removed. The best advice I can give relative to the over correction phenomena is to watch the animals carefully and if anything, remove the implants a little early. All but one of the significantly over corrected yearlings we have seen were starting in that direction at the time of screw removal. One yearling who all parties thought looked good at the time of screw removal, started to over correct about 1 month after screw removal when training began.

If you have a foal with an angular deformity of the hock (which is not very common), the single screw compression of the appropriate side of the growth plate is the ideal approach. This is the first area that this technique was performed on because the shape of the growth plate on the distal tibia makes the application of screws and wire difficult. This surgery is usually done when the foal is

about 5-7 months old. Again, over correction must be guarded against, but so far I have not seen it in this joint.

If you have a foal with an angular deformity of a fetlock, especially if it is approaching or past the time growth should have stopped (about 3 months of age), the single screw technique would be ideal. This **may** be an area where the cosmetics of the single screw are better. A yearling that is over 14-15 months old with a carpal angular deformity should be considered a candidate for single screw compression as this area definitely slows in growth after 14 months of age.

Obviously neither technique is perfect in all aspects for all horses. We have seen for example the rare horse that corrected, perhaps when they were too young, and then reverted back to their original deformity when the implants were removed. We need to watch these animals carefully, both before and after implant removal, to make sure they do not over correct and that they do not revert back to the original deformity after implant removal. With the single screw technique it usually takes 2-3 weeks to see much of anything and then the correction can go pretty quickly. Optimally, I think they should be looked at carefully on a weekly basis starting about 3 weeks post surgery. Some people start looking at them daily which seems to be confusing.

They should be observed standing as well as walking towards us and away from us. The bone below the deformity should be straight when standing or walking. I find it easier to see the deformity when the horse is walking away. It is important to come up with an average of all aspects. Some horses walk better than they stand and vice versa. Some horses are more off set in one knee than the other making them appear more bowlegged in that leg. We make no attempt to fix the off set knee, only the angular deformity resulting in the cannon bone tipping out at the knee and in at its bottom end.

These are my thoughts and experiences at this time. Obviously another year will bring new experience for us and others who do this type of surgery. I hope this information will help you make an informed decision regarding which surgery you want and also help you know what to look out for.

The crooked questionnaire!

Look at the photographs below carefully and answer the following questions:



1. Valgus or Varus?
2. Single Screw compression or Screws and Wire?
3. Do you recognize these two veterinarians?

Were you right? Answers below.

Answers to the crooked questionnaire:
 1. Person on left Varus—bow-legged, person on right Valgus—knock kneed, and pigeon toed
 2. Neither—it is too late to help them!
 3. Drs. Russell (left) and Rood (right)

- November 2005 - Strangles
- October 2005 - The “dummy” foal
- September 2005 - New medications
- August 2005 - Extracorporeal shockwave therapy(ESWT)
- July 2005 - Vaccination recommendations
- June 2005 - The advantages of high fat/low carbohydrate diets for horses
- May 2005 - The Hoof: Form and function
- March 2005 - Liquid gold
- February 2005 - Breeding the problem mare
- January 2005 - Condylar fractures
- December 2004 - Early diagnosis and treatment of high-risk pregnancy in the mare

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