



STEM CELL THERAPY

In recent years, the use of stem cells for the treatment of tendon, ligament and joint diseases in the horse has generated considerable interest and debate. If you are considering this option for your horse, you need to be aware of the potential benefits, drawbacks, and the techniques we use, to enable you to make an informed decision.

Stem cells are derived from a number of tissues - in all cases, current technology enables us to take cells from a horse and implant the cultured tissue back into the same horse. This is known as autologous therapy. There is ongoing research into the possibility of taking stem cells 'off the shelf', but this is not yet feasible.

A stem cell is a cell that is capable of becoming whatever we desire: it has pluripotency (it can become any type of cell) or multipotency (it can become any cell, but with limitations). We can take fat, skin, blood or, more commonly, bone marrow and, under certain conditions, create stem cells. These can be placed in areas of injury where they will become the type of cell required to repair that injury.

This sounds simple in theory, but is much more difficult in practice. The details of the expansion process (how bone marrow, for example, can be used to create stem cells) are complex and beyond this short article. In the clinical situation, we take the bone marrow from the horse and despatch the sample to a laboratory which return the stem cells to us, ready for implantation.

The process begins with obtaining the 'raw material' - usually bone marrow (fat, skin and blood yield inferior samples for most clinical applications). This is taken from the sternum (breastbone) or ilium (pelvis). The site is chosen after discussion between the veterinary surgeon in charge of the case and the owner - there is little difference in the quality of cells obtained but some veterinary surgeons prefer one technique over the other.

This sample is then packaged and sent to a specialist laboratory where the stem cells can be prepared - this usually takes 3 to 4 weeks. We can make a provisional appointment for you to return with your horse for implantation but this may need to be altered, depending on how quickly the stem cells grow. However, although we like to implant as soon as the cells arrive, the laboratory can be flexible on the day of despatch to suit you.

Implantation is usually, for a tendon injury, a straightforward procedure, performed under sedation and using ultrasound to guide the injection. This can be performed on an out-patient basis. Post-implantation care and exercise will be discussed at the time but complications are very rare. Injections of stem cells into joints or other more complicated lesions may necessitate a general anaesthetic, particularly if the treatment requires inspection and treatment via 'keyhole' surgery: your veterinary surgeon can advise you on this. Clearly, horses undergoing a general anaesthetic usually need to stay with us for a day or two.

Full post-treatment instructions will be provided to you when you take your horse home. In most cases, we like to see your horse again for follow-up assessment between one and three months after implantation.

The greatest cost involved in the procedure is the laboratory expansion of the bone marrow into stem cells. Other costs to consider include the initial assessment, the implantation procedure, courier fees to transport the cells and any follow-up examinations. Please contact us to discuss these costs in more detail as they may vary significantly between cases.

Complications arising from stem cell treatment are very rare. Rejection of the implanted tissue is unheard of because we only treat the horse with its own cells - we never use cells from one horse to treat another. There

is a small risk associated with acquiring the bone marrow as we use a large needle to push into the bone - this risk is greater (although still very small) if the sternum is used as the collection site. Most complications are minor and resolve quickly (e.g. slight bleeding, bruising).

If you have any specific questions about the procedure, or the value of stem cells in treating injuries in horses, please email Marcus Head at Rosssdales Equine Hospital: marcus.head@rossdales.com