Case File: Meniscus Fix

**SIGNALMENT AND HISTORY**

Rio

- 14 year old, Quarter Horse, Mare
- Barrel Horse, competing at a national level
- Began hitting barrels in competition
- Lame, right hind

**LAMENESS EXAM**

- Grade 2/5 right hind limb, worse in circle both directions, positive to flexion of the hock and stifle
- Mild-moderate effusion of the medial femorotibial joint
- Intraarticular anesthesia of the medial femorotibial joint improved lameness 90 percent

**RADIOGRAPHIC AND ULTRASOUND FINDINGS**

- Bone cyst
- Cartilage defect
- Defect in the cranial meniscal ligament
- Horizontal tear of the meniscus

Radiographic examination revealed a shallow cyst on the medial condyle.

Ultrasound examination revealed the cyst on the medial condyle.

Ultrasound of the right medial meniscus. The arrow indicates the tear.
PROPOSED TREATMENT

**Extract Rio’s Own Stem Cells**
- Aspirate bone marrow from tuber coxae
- “Expand” by culturing them over approximately two weeks using a process developed at the CSU Orthopaedic Research Center.
- Use Rio’s blood to create a biologic “glue” called fibrin
- Mix fibrin with stem cells
- Inject mixture into injury so that torn tissue regenerates and heals

**TREATMENT**
- Arthroscopic surgery to debride cartilage, cranial cruciate ligament, and meniscal tear
- Extract stem cells from Rio’s hip
- Recuperate from surgery while extracted stem cells are expanded
- Cells and fibrin injected two weeks later
- Rio returns home for monitoring and rehab after short hospital stay

Stifle arthroscopy revealed a cartilage defect on the medial condyle.

Fraying on the cranial tibial meniscal ligament.

Arrow shows the cartilage defect on the femoral condyle.

The cranial tibial meniscal was debrided.

Bone marrow derived stem cells were harvested and expanded over two weeks at the CSU Orthopaedic Research Center.

Five million cells were placed into medial lat fem tib joint and lateral femorotibial joint.

Stem cells in fibrin glue (10 million) were placed into the horizontal defect in the meniscus by ultrasound guidance.

The cranial tibial meniscal was debrided.
Healing of the meniscus was monitored with ultrasounds and lameness exams for one year. With each ultrasound examination, Rio’s meniscus improved and eventually healed. The healed meniscus is shown between the red arrows above. Rio returned to work successfully 1 1/2 years after surgery and stem cell therapy.

RECHECKS AND REHABILITATION
• First two to three weeks at home: stall rest
• Hand walking (increased over several weeks)
• Jogging (after several months of hand walking)
• Adequan® intramuscularly
• Recheck ultrasounds every 2 to 3 months

ONE YEAR AFTER SURGERY
• 80 percent improvement
• Six months additional rest

1 1/2 YEARS LATER RIO IS BACK IN THE ARENA
• 100 percent recovered
• Running 1-D and 2-D times
• Confidence increases
• Times decrease

Owner gave horse 1 1/2 years of rehab, recheck ultrasounds always revealed improved meniscus. Two years post-op, sound, horse and owner have been back, successfully, competitively barrel racing for two years.
DISCUSSION POINTS

• Ultrasound exam is an important component of assessing the meniscus even if arthroscopy is intended.
• Mild to moderate lesions of the meniscus can heal with the help of arthroscopy and biologic therapy.
• Bone marrow derived stem cells appear to be helpful in healing meniscal lesions.
• A stifle study funded by the American Quarter Horse Association is now ongoing at CSU in which Quarter Horses can undergo a free CT (computed tomography) of their stifle and have funding toward diagnostic arthroscopy. For more information call Drs. Laurie Goodrich, Chris Kawcak, or Brad Nelson at (970) 297-5000.

TAKE HOME MESSAGE

Meniscal damage should be suspected in any horse that has stifle effusion and improves following a femorotibial joint block. It is important to combine ultrasound exam and arthroscopy to get a “global” assessment of the stifle joint. Biologic therapies such as stem cell treatments combined with surgery appear to be helpful in stifle joints in which cartilage, ligaments, and/or meniscus are injured.