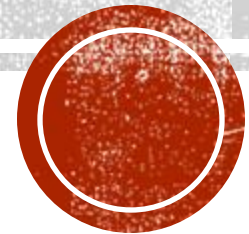
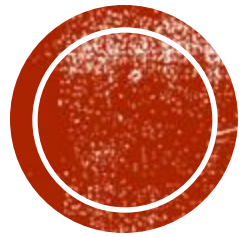


REGENERATIVE MEDICINE CASES IN THE REAL WORLD

Heather Owen, DVM, MAV, CCRP, CCFT, MT, Owner of
Animal Acupuncture and Canine Sports Medicine Facility,
LLC





GOALS

Case Study 1 and 2

To help us identify patients for regenerative medicine

How to measure outcomes

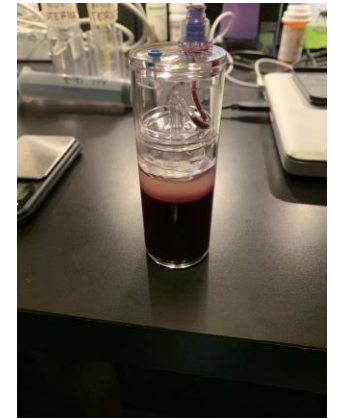
How to formulate a rehab program

Assess when release or retreat



PLATELET RICH PLASMA

- Platelets recruit, stimulate and provide a scaffold for stem cells
- Platelets suspended in plasma are placed in diseased tissue (joints, wounds, muscle injuries, ligament/tendon abnormalities, non healing fractures, spinal cord trauma)
- PRP promotes healing by supplying growth factors (alpha granules), cytokines, chemokines, and other bioactive compounds
- Growth factors act to enhance cellular migration and proliferation, angiogenesis, and matrix deposition, which promote tendon and wound healing, aids in cartilage health and counteracts cartilage breakdown associated with osteoarthritis
- In Case 1 study situation, no matter the age that the FMCP is removed, the joint has already been altered, PRP allows the joint to go into a reparative state.



OUTCOME ASSESSMENT

- **Goniometry:**

- Flexion/extension of affected joints

- Normal:

- Carpus 20-35 F, 190-200 E
 - Elbow 20-40 F, 160-170 E
 - Shoulder 30-60 flex, 160-170 E
 - Tarsus:40F, 170E
 - Stifle:45F, 160-170E
 - Coxofemoral:55F, 160-165E

- **Lameness Evaluation:**

- 0/5 Walks normally
 - 1/5 Slight lameness
 - 2/5 Obvious weight-bearing lameness
 - 3/5 Severe weight-bearing lameness
 - 4/5 Intermittent non-weight bearing lameness
 - 5/5 Continuous non-weight bearing lameness

- **Stance Analysis:**

- 60% weight bearing with Front Limbs
 - 30 LF/30RF

40% weight bearing with Hind Limbs
20LH/20RH





CASE #1

DEET

Deet is a 3 year old German Shepherd Dog training to be a therapy dog for people with mobility issues.

Hx: 1 year ago he was refusing some cues and was diagnosed with elbow dysplasia. Surgery was performed where a fractured medial coronoid process was removed bilateral. One year after surgery he was still refusing cues and officially pulled from therapy training.

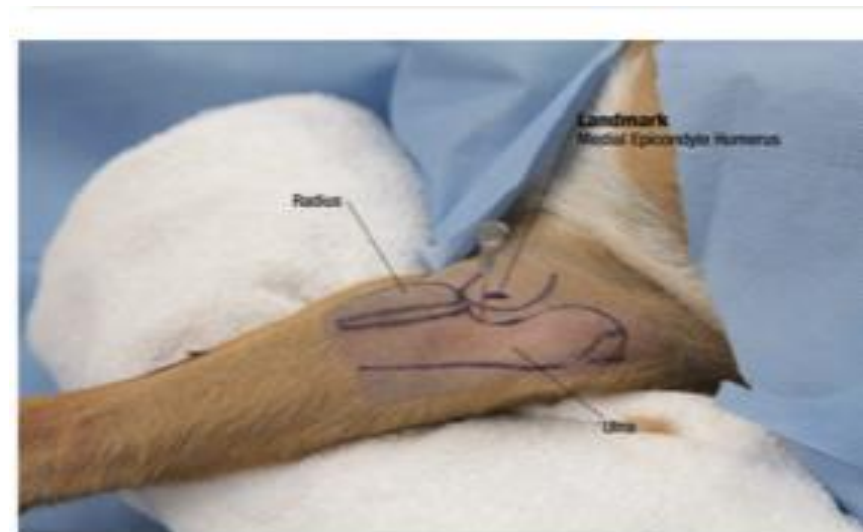
Exam: On presentation goniometry was: Left elbow flexion: 70 degrees, right elbow: 54 degrees flexion. His Stance Analysis was 30/22/24/24. He was diagnosed as 3/5 lame on his left front at a walk using the HUDL technique app on my Iphone. Deet had not been started on any disease modifying neutraceuticals yet. He was scheduled for PRP and rehabilitation.



DEET'S PROGRAM

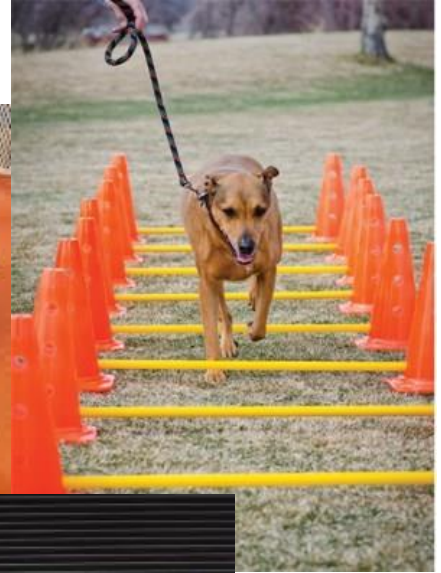
- PRP was administered at 1.5mls one time to both elbows
- Elbows underwent photobiomodulation at 0.5watts for at 10 joules/cm² after PRP , 24 hours after PRP and weekly for 1 treatments. No NSAIDs were administered for 2 weeks.
- 2 weeks Post PRP he was started on disease modifying neutraceuticals and rehabilitation was initiated

- Pic taken from companion Health Joint injection Book to show landmarks and needle placement for Deet's PRP administration



REHABILITATION PROGRAM FOR ELBOW DJD POST PRP

- Rehab at home was initiated week 1 post procedure: slow leash walks up to 5-10 minutes 4 times/day, PROM of his both of his front limbs: 10 reps BID
- Formal in clinic rehab for Elbow DJD was initiated on week 2
- Walking in UT for AROM with water at height to achieve max elbow flexion.
- Balance exercises on fit paws products utilizing isometric contractions were utilized weeks 2-4. Balance equipment (fit bone: HL up with FL down, Rocker board to work flexion and extension and as a ramp to facilitate isometric of standing with HL higher than FL) were performed weeks 4-8. Strength building exercise Stand to down/down to stand, cavaletti rails, Tunnel Crawling, Stairs, with lateral side stepping and figure eight walks weeks 8-12



HOME EXERCISE PROGRAM



ASSESSMENT OF PROGRESS

- **Original:**
 - Stance Analysis: 30/22/24/24
 - Left Elbow Flexion: 70 degrees
 - Right Elbow Flexion: 54 degree
 - Lameness 3/5 LF
- **8 weekly in clinic rehab sessions:**
 - Stance Analysis: 31/26/25/18
 - Left Elbow Flexion: 38 degrees
 - Right Elbow Flexion: 35 degrees
 - Lameness: 0/5
- **3 month follow up:**
 - Stance Analysis: unchanged at 31/26/25/18
 - Left Elbow Flexion: 40 degrees
 - Right Elbow Flexion: 29degrees
 - Lameness: 0/5

Will recheck at 3month intervals to determine if another PRP treatment is indicated. HEP will continue for life as well as disease modifying neutraceuticals



CASE #2: CHIP

- Hx: Patient presented for new onset of limping on frontlimb. Has chronic DJD of hips, hocks
- MSK evaluation: General muscle atrophy to lumbar epaxials, gluteals, hamstrings and quads, Pain on left shoulder palpation with thickened biceps tendon
 - R Hock Flexion-- 80 degrees . (hard/boney end feel)
 - R Stifle Extension-- 135 degrees
 - R Hip Extension-- 149 degrees (soft tissue guarding)
 - L Hock Flexion-- 110 degrees (hard/boney end feel)
 - L Stifle Extension-- 155 degrees
 - L Hip Extension-- 142 degrees (soft tissue guarding)
 - L Elbow Flexion-- 40 degrees
 - L Should Extension-- 110 degrees (guarding and painful in extension)
 - Left supraspinatus trigger point with thickened biceps tendon
 - Left shoulder abduction at extension: <20degrees
- Stance analysis: 24/31/21/24
- MSK Ultrasound: Bilateral Supraspinatus insertional tendinopathy, and Bicipital tenosynovitis LF
- Diagnosis: Left bicipital tenosynovitis, concern for supraspinatus insertional tendinopathy, coxofemoral DJD, Tarsal DJD, Stifle DJD



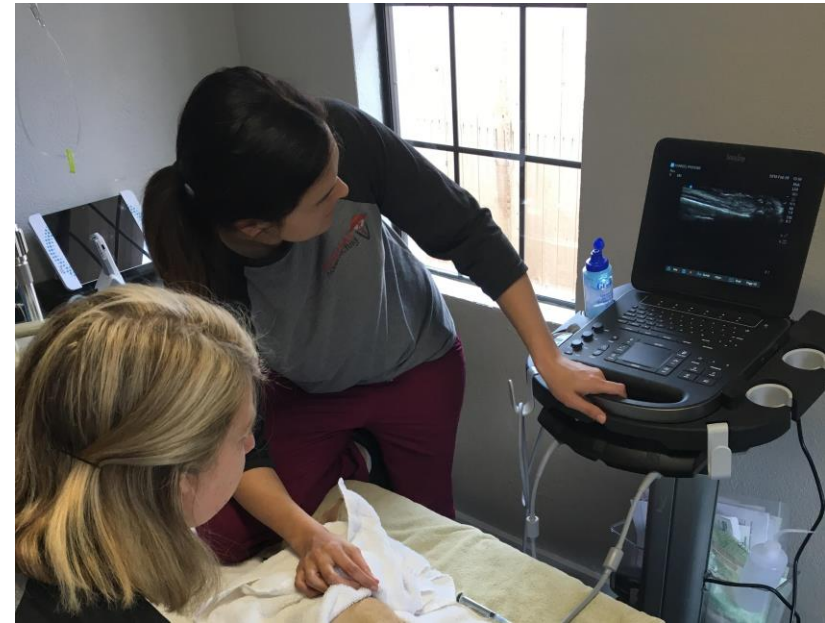
WHY PRP?

- Chip is a Veterinarian's personal dog.
- He has had bilateral extracapsular stabilization of his stifles. He has been on disease modifying neutraceuticals, NSAIDs, gabapentin, tramadol and is still painful. He has undergone photobiomodulation therapy at their clinic at 5J/cm² weekly for a year without much improvement
- The new trauma that occurred is suspected slipping on the hardwood floors causing him to fall down and he has had trouble ever since.
- Why did we choose PRP? His quality of life and pain management depended on it.



PROCEDURE

- PRP was administered utilizing MSK ultrasound into his Left SST and Left biceps tendon at 1 ml each
- PRP was administered into both coxofemoral joints using 1ml each
- Photobiomodulation using 0.5 watts to deliver 10J/cm² over SST/Biceps tendon, coxofemoral joints, stifles, tarsus bi: Day of PRP, 24 hours later, and then increased to 20J/CM² 3x/week for one month.



REHAB POST PRP

- Week 1:
 - PROM to shoulders, elbows and hips, stifles, tarsus: 10 Reps BID
 - Slow leash walks 5 minutes QID
- In the clinic:
 - Photobiomodulation at 0.5Watts post PRP, day 2, day 7 over shoulders, hips, tarsus, stifles, then increased to 15 watts at week 2
 - Acupuncture PRN



WEEK 2-12

- In clinic:
 - UT
 - Week 2-4: isometric contractions utilizing Fit bone, B-pads with standing on all 4 limbs, and 3 legged stands
 - Week 4-8: add in flexion/extension: rocker board, caveletti rails, stairs, sit to stands, stand to downs
 - Week 8-12: adduction/abduction exercises: rocker board, lateral side stepping, hip push, pivot with FL up on B-disc



HOME EXERCISE PLAN



PROGRESSION

▪ Original

L tarsal Flexion-- 110 degrees
(hard/boney end feel)

L Stifle Extension-- 155 degrees

L Hip Extension-- 142 degrees
(soft tissue guarding)

L Elbow Flexion-- 40 degrees

L Should Extension-- 110 degrees
(guarding and painful in
extension)

Left supraspinatus trigger point
with thickened biceps tendon

R tarsal Flexion-- 80 degrees .
(hard/boney end feel)

R Stifle Extension-- 135 degrees

R Hip Extension-- 149 degrees
(soft tissue guarding)

▪ Stance analysis: 24/31/21/24

Week 4 after Rehab

L Tarsus flexion- 64 degrees

L hip ext- 147 degrees

L stifle ext- 146 degrees

L elbow flex- 48 degrees

L Shoulder ext-159 degrees

R tarsal flex- 91 degrees

R hip ext- 143 degrees

R stifle ext- 153 degrees

R elbow flex- 59 degrees

R Shoulder ext: 163 degrees

Stance Analysis: LF 26RF 36LH
16RH 22

▪ Week 10 after Rehab

L Tarsus flexion: 64 degrees

▪ L Hip Extension: 145 degrees

▪ L Stifle Extension: 159 degrees

▪ L Shoulder Extension: 159 degrees

▪ L elbow flexion: 58 degrees

▪ R Tarsus flexion: 94 degrees

▪ R Hip Extension: 155degrees

▪ R Stifle Extension: 159degrees

▪ R Elbow flexion: 61 degrees

▪ R shoulder Extension: 160 degrees

Stance Analysis: 34/29/18/19

Plan: Repeat PRP



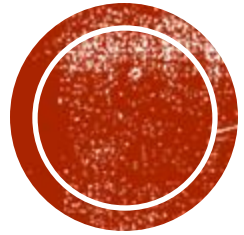


FOLLOW UP

The owner got busy with work and life and forgot to bring Chip in for rehab and forgot to do his HEP.

Chip fell again on hardwood floors and developed more inflammation in his hips/tarsus/shoulders. We applied shockwave to shoulders, acupuncture, and photobiomodulation to his tarsus/hips. Scheduling PRP for next week





ANY QUESTIONS?

Feel free to email me with any questions. Thank you!

