

## Holistic Health Care – Part Fourteen

# Joint Issues Prolotherapy, Prolozone Therapy, PRP

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*Author's Note - This started as a discussion of a specific knee injury and natural, holistic approaches but has expanded from that common issue to cover other joints, the value of different treatment modalities and a general discussion of Ozone, Prolotherapy, Prolozone Therapy and PRP. If it seems to start just at the knee and cruciate and expand outward to more general principles that is because it evolved that way during the writing. That is, similar, to how my journey into the world of Ozone Therapy began – I was looking at another tool for cancer cases and found this wonderful tool (Ozone) for all kinds of cases. Then, when getting Certified in Ozone Therapy I was exposed to Prolozone and realized that this was a whole new generation past the older Prolotherapy (something I shied away from because of its inherent inflammatory properties – it never felt “right”). Then, after having amazing success with Prolozone Therapy, I was at the Annual AAOT Conference in Dallas and saw the value and success of the integration of Prolozone and PRP. So, what started as a fairly narrow and specific use of one tool has expanded into an entire tool chest. Like many things surrounding Ozone and healing in general, this seems to have expanded from the small to the large. Perhaps that is why this article started with a narrow focus and expanded just like it should have since true healing can be limitless.*

## **Prolotherapy is for Knee Ligament Injuries Primarily**

In the past, pets with knee joint injuries, especially dogs suffering from torn cruciate ligaments, have had limited options. Earlier in my career (late 1970's), when a dog came in with a suspected knee injury (usually ACL – cruciate), veterinarians would wait a few weeks to see if this was only a sprain or pull or stretched ligament but, recently, I have noticed an immediate rush to surgery. This may be that:

The injury is extremely severe, or an MRI, CT scan, ultrasound shows a complete tear of the ACL (Anterior Cruciate Ligament). It is rare for these to show up, strictly, on radiographs as they are soft tissue but one MAY show the ligament tearing away from the bone with a small part of the bone still attached – an avulsion fracture.

It may also mean that more veterinary surgeons are available to do the high cost surgery (TPLO being the current standard with some newer modifications being tried). TPLO can have great results but does carry inherent risks, it is expensive and requires 4-6 weeks' post-op restrictions and physical therapy afterward. There are other cruciate surgeries, we used to do before the TPLO was developed and some are still done today. We can create a new ligament made from inert material like surgical Prolene or use part

of the lining of a muscle. This is called an autogenous (from the body) ligament usually from the tensor fascia lata muscle. I realize this is not a discussion of surgical techniques or efficacy but I felt it important to note this ‘trend’ in veterinary medicine.

Due to the high cost and post op maintenance required, many owners elect to just use pain medication and hope things heal. They can take this course, depending on the degree of damage and the size of the animal, general muscling and a number of other factors, but there is also potential strain on the opposite leg. It is also VERY common to see the other knee’s cruciate go in a few months or a year after the first. There has been discussion and general agreement in the holistic veterinary community that there may be an auto-immune component involved in this susceptibility. We see the same thing in ear hematomas in dogs, one side occurs, then the other and not from injury or head shaking. This immune component may be worsened by over use of vaccination and other immune disrupters.

There is also a very common knee problem (usually found in smaller breed dogs) called luxating patella (plural is actually patellae) or kneecaps, which can slip to the side of the knee joint when the dog walks. This condition requires its own set of therapeutic options. These may include Prolozone, PRP, Prolotherapy, laser, Nutraceutical supplements, homeopathy and related therapies, but this condition is usually mechanical or a malformation and may need surgical correction. We have seen many younger patients outgrow this condition or compensate well with appropriate nutrition, integrative therapies and time.

Please realize we are still just talking about the knee joint. Hip injuries and dysplasia have their own surgical and medical options in conventional and holistic medical world. In our practice, however, many of these same principles apply and include: Acupuncture, Herbs, Homeopathy, Chiropractic, Prolozone, PRP, Stem Cells, Cold Laser, Nutraceutical Supplements and OF COURSE, Nutrition.

As we mentioned, less severe injuries of the knee (and unless we have proof of rupture) that look severe at the onset, do very well on their own in a few days to weeks (as they were just a bit partial, stretched or strained), I cannot recall a case, in almost 40 years, where I recommended immediate surgery in an acute presentation. Many conventional veterinarians are conservative and recommend anti-inflammatory and pain medications and wait to see if things are improving before rushing to surgery. That is why I feel there is always time for you to explore other approaches.

From the holistic side, we have used acupuncture, moxabustion, laser therapy, herbs and homeopathy with excellent success, and a number of holistic vets have been using Prolotherapy for decades. Literature often uses the terms Sclerotherapy and Prolotherapy together but, there is a difference as well as an overlap. Sclerotherapy attempts to irritate the joint as its main goal – to create inflammation and scarring. There are many different formulas and techniques for Prolotherapy – they include adding multiple irritating substances along with numbing medications and some items that may help collagen formation. Sometimes steroids are included. Many practitioners have their own “custom” injection formulas and methods.

## **Prolotherapy versus Prolozone Therapy**

**Prolotherapy** - The basic protocol with Prolotherapy requires a series of injections into and around the knee and, while preferable to surgery, Prolotherapy has a number of limitations when compared to Prolozone. It often requires more treatments to be effective. Also, as just discussed, most Prolotherapy acts, primarily, by creating temporary joint inflammation and some fibrous tissue (scar) formation thus “tightening” the joint and joint capsule. It may also help create a healing environment for collagen, but that is dependent on components included, each patient, and each situation. Do not get me wrong, Prolotherapy it has helped many people and animals and can have excellent outcomes.

Unfortunately, Prolotherapy, in animals, often requires sedation as it employs multiple injections at each session that MAY be painful. This procedure is repeated, every two- three weeks and your pet often must have a series of four - six sessions to gain maximal effect. There has also been some work done for hip injuries, but standard Prolotherapy is focused on the knee!

**Prolozone Therapy** is an alternative to traditional Prolotherapy and it is unfortunate they sound so alike – **I prefer Joint Restorative Therapy but it has yet to catch on.** Prolozone Therapy (first developed by Dr. Frank Shallenberger for people) delivers impressive results by offering a non-surgical approach that involves the injection of vitamins, procaine and other healing items PLUS Ozone gas into and around the joint. This treatment isn’t as painful as Prolotherapy and usually does not irritate the tissue. Once again “usually” it only requires three or four treatments at the maximum. Another major plus is that Ozone has antibacterial properties resulting in a much smaller risk of infection compared to Prolotherapy.

We, typically, do not need to clip the hair from around the area (as Ozone kills all bacteria), we numb the skin with a few freezing drops, the use a tiny needle to inject an anti-inflammatory and pain reducing formula that combines 5-7 vitamins plus procaine, in a buffered solution. We then follow this with the Ozone gas in and around the joint. Since direct Ozone injection under the skin or into the muscle or joint may be painful, we prefer to include the procaine to be safe, plus we often see both immediate and lasting response with this technique.

### **To summarize:**

While Prolozone Therapy can be used to treat any damaged joint, older Prolotherapy it is most commonly used to treat damaged knee joints that have endured a torn cruciate or a torn meniscus. With Prolozone Therapy, we also see significant improvement in osteo-arthritis, scar therapy and related issues. This may be the healing effect of the Ozone alone, but the Prolozone solutions we use appear effective (though less so) even when Ozone has been withheld. It is the combination that seems the most beneficial. We have recently added PRP therapy to our tool chest, and having the ability to add the occasional (usually 1-2) PRP injections to this regimen may be our most promising therapy yet for severe cases or cases that are not responding to Prolozone Therapy alone.

## **So.... What is PRP Therapy?**

Platelet Rich Plasma Therapy is another regenerative medicine therapy. PRP is alive with growth factors, which can stimulate healing in a degenerative or injured joint or tissue. These growth factors do not transform into stem cells but they have regenerative capacity, are anti-inflammatory and appear to stimulate stem cell attraction or production. PRP Therapy can be used for degenerative joint disease, arthritis and musculoskeletal injuries. It is also used in bone grafts, dental implants, wound therapy and cosmetic procedures (in people) but that is a WHOLE other paper.

PRP has been used in humans and for equine injuries for years and is now being used in small animal medicine as well. One benefit of Platelet Rich Plasma (PRP) is that it is an "autologous" product, meaning it is made from the patient's own blood. This reduces the chance of negative reactions. As you will see later, different systems of obtaining the PRP have Pure PRP, or PRP with some red cells and white cells. There is still experimentation and discussion as to what concentration and combination is best in what kind of case, but the "pure" PRP fraction has been shown to work well in our companion animals. This portion of the blood is full of platelets (hence the name) and at least ten different growth factors that stimulate cell growth and healing, promote formation of new blood vessels, and can help make a matrix for further repair. There are, I am sure, many benefits and factors that are yet to be discovered.

In summary, a sample of blood is collected from the patient and is mixed in a special sterile tube or apparatus, usually with ACD anticoagulant. As you will see later, the volume of required blood can vary with the animal (horse versus dog for example) and the method and/or system being used. The sample is then spun at very high speeds in a special centrifuge. The Platelet Rich Plasma portion with the growth factors and other important components is then separated and collected into a syringe. In the cases of intra articular (joint) injections, the injection site is surgically prepped and depending on the patient, a sedative may or may not be used. We prefer to inject while using the ultrasound to help us place the PRP solution exactly where we want it.

## **PRP (Platelet Rich Plasma) Systems, Rational, Methods, Cost and Detail.**

We have, recently, invested in the equipment and training to integrate Platelet Rich Plasma (PRP) injections in selected cases. PRP is collected from the patient's own blood (our system requires 15 ML – so it can even be used on small breeds) and created via special kits and high-speed centrifuges. This is explained in more detail below.

The PRP injection usually comes between the Prolozone Injection and the Ozone. The injection sites are usually shaved for sterility and ability to use ultrasound to guide the needle to the specific sites especially in the hip joint and spine. We want to do the best injection we can for medical reasons, of course, but also because quality PRP generation kits are not inexpensive or reusable.

They also require very specific types of high-speed centrifuges and special rotors to create the correct balance to collect effective PRP. We studied multiple systems and decided on the Arthrex ACP system for a number of reasons. It has been effectively used and refined for years and derived from their human systems. It has a great track record and has been used in equine practice (required 60-120 mL blood) and then small animal practice (there we use only 15 mL per kit of whole blood).

Currently, our cost in materials is about \$140 for a sterile, one time use, PRP Collection Kit.

There are some cruder, older, homemade techniques that use simple blood tubes, regular low speed centrifuges, which take more blood and cost less to gather PRP per patient. However, the final result tends to be much less concentrated PRP, plus many white and red blood cells that seem to create inflammation. On the other side, there are other systems that may give higher PRP concentrations but require minimum 30-50 ML of blood and cost 2-5 times as much per one-time kit.

The bottom line is that we selected a well know, well respected system that allows us to administer effective PRP with a reasonable amount of blood, at a reasonable cost and the actual collection, spinning, retrieval process is short (5-10 min), so the PRP is ready during the same session. Since we feel sedation may be important during this procedure, we wanted speed plus quality.

As previously mentioned, we may prefer to do these injections under ultrasound guidance for the most accurate placement of the PRP solution. This is always dependent on the animal, the specific joint and the extra preparation, such as clipping the area for ultrasound use plus use sterile technique, even though the PRP is still followed by Ozone to kill any stray bacteria, activate the platelets, stem cell attractors and growth actors concentrated in the PRP and, of course, do the same healing that makes it so valuable in Prolozone Therapy alone.

In some animals, mild sedation is also required for Prolozone therapy alone, while other animals are perfectly treatable without any sedation.

## **Here is an excerpt from Arthrex on their system.**

PRP - We are using the Arthrex ACP® Double Syringe System. It is used to facilitate the safe and rapid preparation of autologous platelet-rich-plasma (PRP) from a small sample of blood at the patient's point of care. There has been increased interest in autologous blood products for use in a number of orthopedic therapies. The healing effects of platelet-rich plasma are caused by growth factors released from the platelets, which may induce a healing response. The Arthrex ACP Double Syringe System is a cost-effective method for concentrating growth factors for therapeutic use. Producing the ACP with the Arthrex ACP System can be performed within minutes. Typical platelet rich plasma (PRP) systems can take up to 45 minutes to process the blood for application, thereby delaying treatment and increasing the cost of the procedure.

An Actual Case – “Dingo” the Chow Mix

Here are Photos from a Typical case – 12-Year-Old Chow mix (“Dingo”) with severe weakness in his back legs, trouble standing and had responded well to 2 Prolozone therapy sessions over past month. PRP was administered into both hips and left knee as the hips were the main focus but had a little PRP left so added it to “up knee”. “Dingo” always took a little sedation for the Prolozone (as he liked to voice his objections with his teeth). We sedated, collected the blood, injected the Prolozone solution, then the PRP after Activating Platelets with Ozone, then added another later of Ozone Gas into the final injection of PRP. We did treat with Cold Laser as Dingo was waking up with owner present. Four days later, the owner reported Dingo was MUCH more mobile. He was now, standing to eat, getting up, walking well, although still some weakness and trembling right rear (knee I did not use PRP), but was improving. Now we wait. We may repeat Prolozone alone or just continue Laser Therapy. At home herbs and care while giving the PRP time to really kick in as that was only 4 days’ post treatment. Dingo may need a repeat treatment as we are unsure of duration in his case. Depending on response duration, I would consider repeating PRP and treating hips, both knees and maybe lumbo-sacral spinal joint next time.

Interesting note: ACD (anticoagulated PRP) has been frozen and appeared almost as effective up to 6 months later (anecdotal). We feel this MAY mean the smaller patient taking less PRP, initially, and may allow us to freeze the remaining sample to be used for additional therapy later if needed. Thus avoiding blood collection and additional ACP kit cost.



*Figure 1-New Sterile ACP-30 PRP Kit Open Note Dual Syringe (inner Syringe still in place)*



*Figure 2 ACP Unit with Blood and ACD*



*Figure 3 - Sample in Centrifuge pre spin*



*Figure 4 - Ready to Spin*



*Figure 5 Post Spin PRP Layer - Dual Syringes Still Combined*





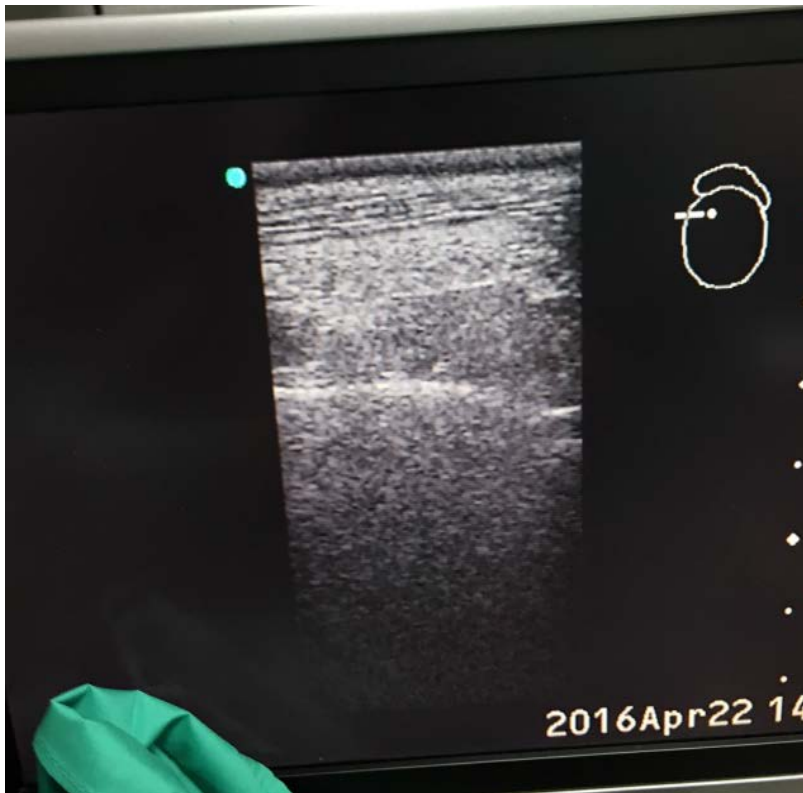
*Figure 6 Aspirated PRP into inner syringe and separated for use*



*Figure 7 PRP Separated and ozone Activated Pre administration*



*Figure 8 Ultrasound Probe for Injection Guidance*



*Figure 9 Getting Ready to Inject PRP - Needle just visible upper left below dot*

## **In Conclusion:**

We started out discussing a damaged cruciate ligament in a knee and ended up in the world of growth factors, high-speed centrifuges and some really remarkable strides that have been made with Prolozone and PRP therapy. I always find it fascinating to use 5,000-year -old acupuncture in the same session as 21st Century Cold Laser Therapy. Now we are adding PRP, growth factors and ultrasound guided injections, but the most important thing to remember is that healing may use some of these things as tools, but the art is knowing what things work best in each individual case and situation and using tools that complement each other. Healing expands and takes you down the right road, if you allow it.