HOW TO CHOOSE THE RIGHT STEM CELL CLINIC: WHO, WHAT, WHERE, WHEN, AND HOW

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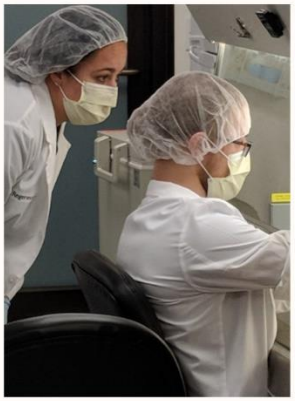


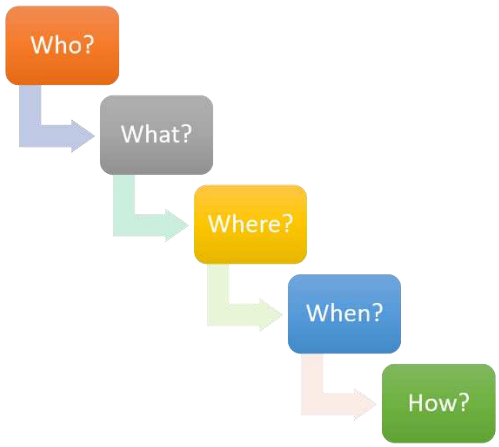
Intro

I take for granted that since I've been performing orthopedic stem cell procedures since 2005 and since I was one of the first doctors on earth to do many of these procedures, that I can easily look at a website and tell the quality of the stem cell work being done at that clinic. I can often even tell who trained the clinic or what products they use, or whether the providers likely have a clue as to what they're doing. So, if you had me over your shoulder while you're searching for the best orthopedic stem cell care, I could easily steer you to the best clinic in any given area or tell you that you should be traveling elsewhere to get it. However, how do I distill all of that knowledge into a short read so that a patient can easily see many of the same things I do? That's my goal with this mini-book.

First, this is not being written by a ghostwriter or a web developer. This is Dr. Centeno doing the writing. I even took the pictures for the front cover and created all of the illustrations. Why take the time to do this? Because I see patients getting ripped off every day and it upsets me.

The 5 Questions You Need to Get Answered to Make Sure You Don't Get Ripped Off

We have an epidemic of stem cell scams out there. Fake or dead cells, poorly done procedures, and providers who just took a weekend course and are making you their first Guinea pig. So how can you make sure that you get something real and not a fake and bake? Read on.



If you want to make sure you don't get ripped off by clinics scamming patients, you need to get these five simple questions answered:

1. Who will be doing the procedure?
2. What will they be injecting?
3. Where will they be injecting it?
4. When does it work and not work?
5. How will they be performing the procedure?

Hence, that's how I'll structure this book: Who, What, Where, When, and How. But first, a quick introduction to what we're discussing.

What is Interventional Orthobiologics?

At Regenexx, we pioneered a whole new way of looking at and treating orthopedic injuries without surgery. This is called interventional orthobiologics or interventional orthopedics. In 2005 when I, and my partner, John Schultz, M.D. began this work, there was nobody else in the US or the world looking at how to use stem cells to replace common orthopedic surgeries. We were "it". So, any clinic you can go to now learned from somebody who learned from somebody, who learned from somebody, who learned from us.

What has this all evolved into since 2005? We first diagnose what's wrong using a biomechanical and nervous system approach to the whole body. Then we help the body's ability to heal by injecting orthobiologics using sophisticated imaging guidance into specific areas using new techniques and procedures, many of which we pioneered. This way to diagnose and the unique procedures we offer are not things that your doctor can learn in the vast majority of medical training programs, hence, this is new knowledge.

What are Orthobiologics?

Orthobiologics are substances that can be injected that prompt healing in orthopedic tissues. This includes things like platelet-rich plasma, stem cells, extra-cellular matrices or other products. They can be autologous (from the same patient) or allogeneic (from another patient).

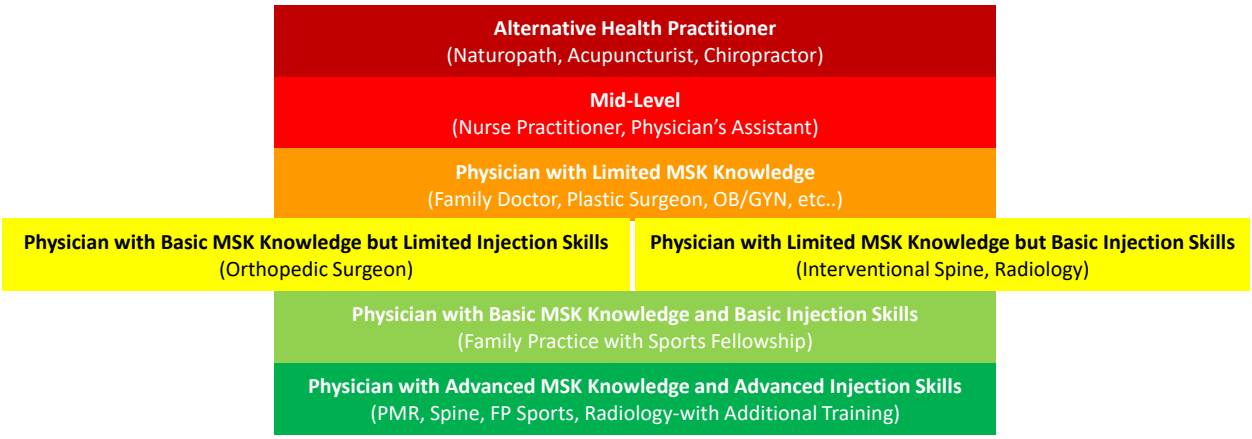
What is the Musculoskeletal System?

Your body is made up of bones, joints, muscles, tendons, ligaments, and tissue that cushions like menisci, labral tissue, or discs. This is called the musculoskeletal (MSK) system. Our focus here is on treating things like arthritis, tendon or ligament tears, and spinal issues.

Chapter 1-Who?

It may seem like a simple issue, but who will be performing your procedure is critical. We would all like to believe the little fiction that all medical providers are equally trained and competent. In some areas of medicine that may be truer than others, but in regenerative medicine, it's a dangerous fiction. Expertise matters.

Finding a Quality Physician



The problem with finding a quality physician who does quality interventional orthobiologics work is that this is a brand spanking new field. There is very limited training currently in this area in medical schools, residencies, and fellowships. That has left only a for-profit training system that is often more focused on selling products than actually providing excellent training. Finally, there are only a handful of non-profits that offer quality orthobiologics training. Hence, you can't use your typical metrics to find good doctors.

We will start with stuff to avoid, which is why it's red or orange. We'll go through each one below:

Alternative Health Practitioners

What's bizarre about orthobiologics is that unlike other areas of medicine, we see alternative healthcare practitioners pushing the bounds of their practice acts by performing injection procedures. For example, we see naturopaths who are often violating or pushing the boundaries of their state laws, meaning that the law says they can only perform a minor office procedure, but instead they're performing spinal injections that aren't minor.

My biggest issue with this category is that there is no standardized injection-based training for these alternative health practitioners. Many of the organizations who you will read about in this book who could provide some education refuse to train naturopaths, acupuncturists, and chiropractors. Why? They don't have the basic medical training that would allow them to handle complications. Meaning, stuff happens during injections and the provider must know how to be able to recognize problems and how to treat or refer to the right provider who can treat. Oftentimes hours matter, so a delay by a few days can make the difference between a no big deal, and a catastrophic outcome. As an example, I've seen many physicians complain that a local naturopath in their area totally missed an infection caused by an injection solely because they didn't have training in how to recognize a sick patient. Why? Much of their training involves treating patients who aren't critically or seriously ill.

Mid-levels

What is a mid-level? This is not a doctor, but instead a licensed medical provider (physician's assistant or nurse practitioner) with about half the education of a physician specialist. For example, our fellows at Centeno-Schultz have four years of college, 4 years of medical school, and four years of residency training before they walk in the door. They then go through an additional one year of super-specialist training in interventional orthobiologics. That's 13 years past high school! The average mid-level has about half of that training.

All too often we see mid-levels who are delivering Orthobiologic injections. Why? There's really only one reason, they are dramatically cheaper than a specialist physician (often by 2/3rds less). Hence, you can immediately tell if the clinic you're planning on seeing is putting profit over quality if the person performing the evaluation and/or injection is a physician's assistant or nurse practitioner. That's not to say that there aren't great mid-levels who can do a fantastic job with many things. However, again, the credible organizations who perform advanced training in this area don't train mid-levels. Why? The complex decision-making skills needed to figure out what goes where requires physician-level training. In addition, increasingly complex injection procedures require physician skill levels. Finally, this is still investigational care, so the type of science background that's required to provide a real therapy is doctorate level. Having said that, if you have a problem during a procedure, a mid-level is far more equipped to deal with that problem than an alternative medicine provider like a naturopath, acupuncturist, or a chiropractor.

Doctors in the Middle of My Illustration

As I have already touched on, regenerative medicine is unique in that right now, there's a vacuum of education and training, which means that we see all sorts of specialties who are treating conditions in which they have little experience or knowledge. Take for example a plastic surgeon who treats low back problems with stem cells, or a cardiologist treating knee arthritis. Most of this is just common sense, right? What would a doctor who normally does tummy tucks and breast augmentations know about your spine? Or what would a doctor who normally inserts catheters into the heart know about your

knee? Hence, do your homework and check on the board certification or type of specialty that's supposed to be treating you. If you have an orthopedic problem, the specialties that get training to understand joints, muscles, tendons, ligaments, and the spine are usually only physical medicine/rehabilitation (PMR), family practice with a sports medicine fellowship, or orthopedics.

Why is this a problem? To help your problem, you need a doctor that can figure out what's wrong. Meaning, figuring out where to place the cells is as critical as what's placed.

Also in this category, we have doctors who do know the musculoskeletal system like orthopedic surgeons, but who have little image-guided injection training. Or, we have doctors who specialize in spinal injections using x-ray guidance, but who know little about how knees, shoulders, or ankles work. In this category, while we have more skill here, it's not the sweet spot combination of knowledge about the MSK system and the ability to place needles using imaging guidance in joints outside the spine. To understand the difference between basic and advanced injection skills, see my discussion below.

Physician with Basic MSK Knowledge and Basic Injection Skills

Finally, we're starting to get into physicians that have some idea of which end is up. These would be doctors who have MSK training like family practice sports medicine, orthopedic surgery, or physical medicine. They can understand what may be wrong but they look at it in a simplistic way, and they only have basic injection skills. What does that mean exactly?

First, let's take a joint like the knee. You may know you have knee arthritis. That means that the cartilage is injured or worn off and that's impacting the bones. So, the focus should be on treating the arthritis, right? Maybe. There are many other structures in the joint like critical ligaments that protect it. In addition, the knee is linked to the low back, hip, and ankle. Do these ligaments or other things need to be addressed? Doctors in this category generally don't know and won't look.

Second, "simple injection skills" means that they generally only know how to inject joints. Again, using our example above, they generally don't know how to inject those loose ligaments. As another illustration, let's say the ACL ligament is loose. That can continue to cause instability that will fry the joint over time. However, you can't accurately inject the ACL using ultrasound, which is most often what these doctors use. You need fluoroscopy, which is real-time x-ray guidance as this can "see" the ligament inside the joint. You also need to have training on how that's done, but there is no training for this injection that can be had inside residency or fellowship programs in universities. It's just knowledge that's too new.

Physician with Advanced MSK Knowledge and Advanced Injection Skills

So now we're finally at the crème of the interventional orthobiologics crowd. These doctors have basic MSK knowledge, so they're trained in things like family practice sports medicine, orthopedic surgery, or physical medicine. However, they have taken **additional training** to figure out more than just how to identify an arthritic joint or a damaged tendon. They also have trained to figure out why the chronic damage happened in the first place. They also have advanced injection skills for joints. So, they can both identify that bad spot that really needs help and treat it.

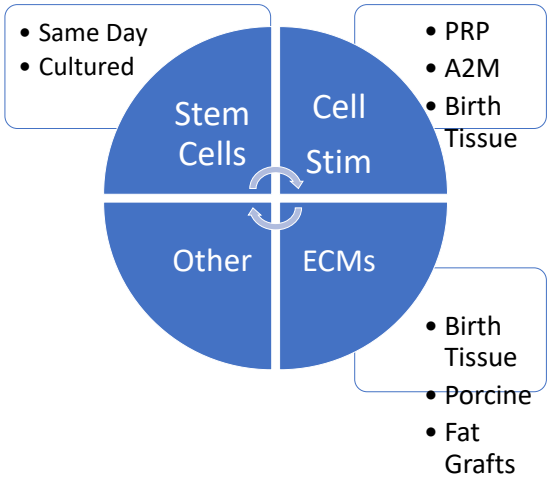
These are the physicians we have chosen for the Regenexx network, but they also exist outside of our network. This is why I founded the Interventional Orthopedics Foundation, a non-profit group that focuses on Interventional Orthobiologics training. All physicians who have the basic skill set can access this training, not just Regenexx doctors.

What separates Regenexx is that our physicians then receive significant **additional** on top of all of that training in the advanced techniques that we pioneered. In addition, they also learn the best ways to apply regenerative techniques.

Top 3 questions to ask the clinic:

1. ***Who will be doing my injection?*** You're looking for a doctor, not a naturopath, acupuncturist, chiropractor, nurse, or physician's assistant.
2. ***Are they a physician?*** The answer should be "yes".
3. ***If so, in what field is their board certification? What additional training in interventional orthobiologics did they undertake?*** Their board certification should be in Physical Medicine, Pain Management, Orthopedics, Interventional Radiology, or Family Practice with a Sports Medicine Fellowship. They should have taken additional course work through an organization like the Interventional Orthopedics Foundation. Beware of fake "stem cell fellowship" programs. These are just for-profit courses that aren't like the real one-year fellowship in interventional orthobiologics run out the Centeno-Schulz Clinic in Colorado.

Chapter 2-What?



While who performs your procedure is important, what they inject is also critical. There are lots of options and this is where much of the bait and switch occurs. Let's dig in!

The biggest problem we see in orthobiologics is what I call the "stem cell bait and switch". Meaning that the clinic claims to be offering stem cells, but in fact, doesn't even offer live cells, let alone live stem cells. This most commonly occurs with birth tissues like amniotic fluid/membrane and umbilical cord blood/tissue. While there is a song and dance by the clinic that these products have millions of young, virile, and healthy stem cells, in fact, our testing and they performed by Cornell, CSU, and UC Davis show no viable and functional stem cells.

What? How is that possible? I've blogged extensively on this topic, so if you want to read more, check out some of these links:

- There are No Stem Cells in Amniotic and Umbilical Cord Products
- A Consensus Document by University Doctors Who Denounce Clinics Using Birth Tissue Scams
- Understanding what the companies that sell birth tissues means when they say "viable"

You may have heard some patients reporting improvement when they had these birth tissues injected. How does that work? Notice above I have them classified at "Cell Stim" (Cell Stimulants). This means that these procedures can help local repair cells to work harder and this may help certain patients recover. **However, they are not live stem cell treatments**. In addition, for most patients, in our experience, much cheaper platelet-rich plasma (a.k.a. PRP or concentrating your own blood platelets) works just as well and works the same way.

Why do some clinics call these dead birth tissues a stem cell procedure? Because it allows them to dramatically upcharge the service. They can take a procedure that works like a platelet procedure and charge 2-5X as much as PRP.

Treatments that contain live and functional stem cells come from your own bone marrow at this point. Aren't these cells too old? After all, that's what the clinics that use birth tissues say. First, as above, those stem cells in birth tissues are dead. Your stem cells keep you alive, as they're constantly repairing tissue. So, if you're alive and kicking, your stem cells are working just fine. They may need to be harvested from one place where they're plentiful, concentrated, and placed in an area that needs healing.

Want to learn more about these topics? Read my book, orthopedics 2.0 (at this link).

Another way to use what the clinic injects to tell if the clinic is legit is to make sure they're using the least invasive, and least expensive, stuff that's the most likely to work. For example, we use many more platelet-based procedures than stem cell procedures. Why? That works well for most patients and all it involves is a blood draw, plus it's generally cheaper for the patient. So, if you ask the clinic about how many stem cell versus platelet procedures they use, they should perform far fewer stem cell and far more platelet injections. What if they say they only use stem cells? In my experience, which is extensive, they're placing making money over your clinical needs.

Top 3 questions to ask the clinic:

1. ***What type of stem cells does your clinic use?*** If the clinic claims that amniotic or umbilical cord products have live and functional stem cells, then run. You're looking for them to say "bone marrow" here.
2. ***Does your clinic offer PRP or platelet-rich plasma?*** You're looking for them to say "Yes".
3. ***How often do your doctors recommend cheaper PRP versus more expensive stem cell treatments?*** Again, ethical clinics use far more PRP than stem cells.

Chapter 3-Where?

So, who does the injection and what's injected is important, but how about where it's injected? While I alluded to this earlier, what's really meant by "where"? Let's get into that topic more deeply.

One of the biggest ways that low-quality Interventional Orthobiologic care is separated from high-quality care is whether the doctor knows where to place the stuff that helps healing. For example, many clinics will inject the cells intravenously (IV) and tell patients that the cells "know" where to go. However, several studies have shown that the vast majority of these cells get lodged in the lungs. In addition, many areas of the body with MSK injuries have a poor blood supply. So how are the cells supposed to get there using the veins? Your guess is as good as mine.

Hence, placing the cells exactly where they need to be is critical. But where should they go? That's the hard part.

First, there's what I call "Level 1 Knowledge". This is the easy stuff. If you have knee arthritis, put the cells in the knee joint. Almost all doctors doing this type of work can identify that a painful joint may need orthobiologics.

Next, there's level 2 knowledge. As I discussed above, targeting specific parts of the joint. For example, is the inside ligament loose which is causing the outside compartment of the knee to get too much wear and tear? In that case, you need to inject the cells in the medial compartment and try to get them to stick to those surfaces and inject the outside collateral ligament. Only a handful of doctors understand this level.

Finally, there's what I call level 3 knowledge. What's connected to the knee that may have problems? How about the spine? Those nerves power the muscles that protect the knee. So, if they're irritated (even if the patient doesn't have much day to day back pain), that can mess with the knee. Then there's the hip, where lost range of motion can cause the kneecap to get misaligned. Finally, the foot and ankle hit the floor and send forces up to the knee. So, if the inside ankle ligaments are weak, the forces that get sent to the knee are off and can overload the outside of the joint. Hence, which of these problems also needs to be treated? Very few physicians think this way or take the time to evaluate the body this way.

Top 3 questions to ask the clinic:

1. ***Does your clinic inject cells IV to treat the knee, hip, shoulder, ankle, spine, etc.?*** If the answer is "Yes", find another clinic.
2. ***Is the doctor qualified to perform spinal procedures using x-ray guidance or is there someone in the clinic who is?*** If the answer is "No" go elsewhere, as this clinic isn't equipped to evaluate and treat your whole body.
3. ***How long will the doctor spend with me and will he or she evaluate my whole body if needed?*** Obviously, if the average new patient evaluation isn't even performed by a physician, then find another clinic, as many clinics will use mid-levels. If a new evaluation is scheduled every 15-20 minutes, that's also not good. In our Colorado clinic, we schedule an hour with each new patient and that's time with the physician who will be performing the procedure. Why? Because that's often how long it takes to do this right. Sometimes it may take less time, but other times, a proper evaluation of the patient, review of imaging, and educating the patient takes even longer than the hour scheduled.

Chapter 4-When?

So, you've read about who, what, and where, but how about when these procedures should be used or when you should get surgery instead of a stem cell injection? The most important part of medicine is knowing when to use which treatment, and when not to use it. That last part is **very** critical, as not everybody is a candidate for orthobiologics.

In order to know the right procedure is to use and when you have to collect and analyze data. Meaning, you have to have collected information about when that specific procedure works or doesn't work. For

example, our data analysis showed years ago that in older patients that have more significant hip arthritis, our same-day stem cell procedure doesn't help prevent a hip replacement. This fits with what others have reported as well. We have other guidelines that we have created based on collecting data on tens of thousands of patients in our registry. That means we pinged these patients on a regular basis and asked them about how they're doing using different research-validated questionnaires for each treated body area.

However, Regenexx is one of the few to collect data at this scale. Ours can be found here:

- Our published research
- Our real-time online registry data

A Word of Caution About Research!

A common ploy in the stem cell treatment space is to substitute medical research that to the uneducated eye looks like it's about the treatment a clinic is using but is really about a completely different treatment. The most common one we used to see is a clinic that uses a same-day stem cell prep from fat and places research on their website that uses stem cells from bone marrow. Now we're beginning to see this same research bait and switch in the fake amniotic and cord stem cell space. Here we see clinics using dead amniotic and umbilical cord tissue and then listing papers that used live stem cells.

Why Would This Be a Problem?

In the case of dead cells, they obviously can't behave like live cells. Hence, if a clinic uses any of the amniotic or cord products on the market today, based on what we have seen and despite the claims of sales reps hawking this stuff, it's all dead tissue. Hence, listing studies that use live stem cells is an obvious fraudulent misrepresentation.

In the case of a clinic using a same-day stem cell procedure with bone marrow or fat and posting research about using isolated and culture-expanded cells, these are apples and oranges. Same-day stem cell procedures have a huge mix of cells with the minority being stem cells. Culture-expanded procedures (like the one our licensed Grand Cayman site uses) isolate the stem cells and then grow a "pure" population of stem cells to bigger numbers. Based on our extensive experience, these two different types of stem cell mixes behave completely differently.

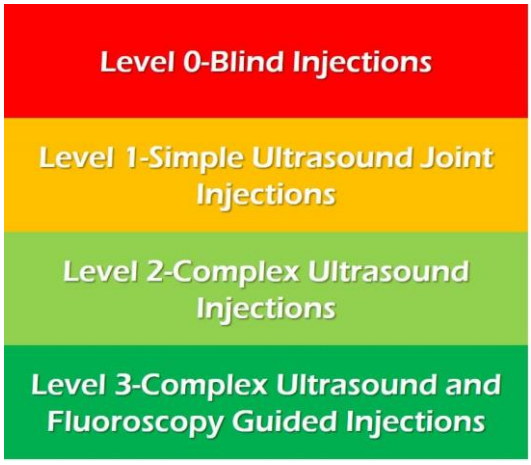
Another common bait and switch is to list studies that used fresh amniotic or umbilical cord cells taken from the obstetrics ward and walked down to the lab for isolation and culture. This is VERY different than the cells that end up in these clinics. In the latter case, the birth tissues sit in a refrigerator in the hospital until someone picks them up and drives them or sends them via air to a tissue processor. Then they sit in a fridge in a processing center and then finally are manufactured into the stuff that gets placed into vials, which are then frozen and then sit some more in a freezer until sold. These are then sent by air to the doctor who then thaws them by hand in his or her office (which is the wrong way to thaw frozen cells). So, after enduring this prolonged torture, these cells are quite dead by the time the doctor uses them. They are also NOTHING like the cells I first described that were sourced on one floor in a hospital and thrown into a lab culture on another.

Top 3 questions to ask the clinic:

1. ***Can you describe for me when someone who has my condition is not a candidate for stem cell therapy?*** Every medical procedure including using stem cells has patients that don't respond. This is NOT magic pixie dust! Hence, they should be able to tell you which patients are less likely to respond. For example, if you have a rotator cuff tear, with our procedure, if the tear is massive, this type of injection procedure won't work. If you have knee arthritis, then it works equally well in more, and in less, severe cases. The clinic at least should be able to have that type of discussion. If they tell you the treatment works in everyone, or that they have never seen a failure, then you need to find another clinic.
2. ***Where is <u>your</u> published research?*** Be very careful here as described above! For example, find out exactly what product the clinic uses. If they won't tell you, then find another clinic who will. Let's say the name of that product is CoreCyte (one of the many umbilical cord products on the market). Then you need to see studies performed by, and published by, that clinic or another that uses the same techniques that used the product CoreCyte. A study using umbilical cord cells that have been cultured isn't the same as CoreCyte. Or if they use bone marrow, you need to see studies that this clinic or their clinic system have published on their method of bone marrow harvest, processing, and re-injection.
3. ***Where are your published results on EVERY consented patient?*** You need to see online results for the hundreds or thousands of patients they claim to have treated, organized by body area or condition. You do not want to see "estimates" or round numbers like, "80% of our patients get better". Also, beware of ridiculous claims like 90% or 99% of patients respond. If they can't show you their data at set time points like 3 months, 6 months, one and two years, then find another clinic who will!

Chapter 5-How?

How the procedure is performed is also critical. In this case, I mean what technology the doctor uses to make sure that the Orthobiologic goes into the right spot. This can range from none to very sophisticated. Let's review below.



Have you ever heard the adage, "you get what you pay for?". I still get burnt by that one on consumer goods. Amazon is rife with junky stuff that looks great online, but when it arrives, you have serious buyer's remorse. The same happens with orthobiologics like PRP and stem cells, but the problem is that it's hard for you as the consumer to understand the quality of what it is that you're getting.

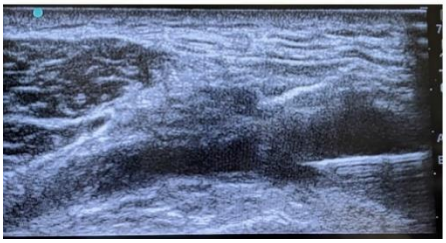
Above, you see my scale for figuring out how the Orthobiologic will be injected. Most injections are blind, meaning that the doctor has no idea whether the orthobiologic even made it into the joint because he or she can't "see" where the needle is going. This is a little like driving your car with mud or snow on the window. You can do it, but the likelihood that something bad will happen or that you won't get where you're going is high.

Some doctors offering “stem cell” injections (most of these are dead amniotic or umbilical cord tissues and not live stem cell injections) use simple ultrasound guidance. That’s better than blind (level zero) procedures as at least you can see that you’re “in the joint”. However, as you’ll see below, this is still like the junk that looks good online but arrives at your door as a disappointment. Let me explain.

Level 2 Injection Skills and Knowledge

Level 2 orthobiologic injection knowledge means that ultrasound is used in a sophisticated way. That might mean that the doctor can use that ultrasound and a hands-on exam to identify damaged ligaments and tendons that also need to be injected. Or the doctor understands that what he or she finds on the ultrasound may need to modify how the procedure is performed. Regrettably, only about 5-10% of doctors using ultrasound have the knowledge to use it this way.

Let me give you a simple problem that would have been missed by doctors with only level 1 orthobiologics knowledge. Before I injected the stem cells into this patient’s knee (below), I performed an ultrasound exam because I knew that he had a history of effusions. This means that he can carry quite a bit of fluid around in his swollen knee. Sure enough, one knee had a big effusion. Why is this a problem?



Concentration is a key issue in medicine. If a drug has a lower concentration it either acts one way or has no effect. If it’s a higher concentration, it acts another way or has an effect. We’ve known for a while that a higher concentration of stem cells on a damaged cartilage surface means better results. However, if you have a huge amount of fluid inside the knee and you inject stem cells, the concentration of stem cells per unit volume goes way down.

How do you fix the effusion so the injected stem cells can be at the right concentration to have their maximum effect? Simple, drain the fluid before you inject the cells! Above you see me doing just that (left) and what I took out (right). That’s 30 ccs of fluid that would have messed with those cells.

While this sounds simple, many physicians don’t do this. Why? It’s easier to inject a joint with ultrasound if there is an effusion.

Level 3 Injection Skills and Knowledge

Now that you have some understanding of level 2 imaging guidance knowledge, let’s look at the next level up. These are advanced skills that no university residency nor fellowship teaches, so the doctor must seek these skills out. Regrettably, few doctors take the time to get to level 3.

For example, we often see patients who have lost cartilage on the backside of their kneecap (patella). As discussed above, one way to treat these patients would be just injecting stem cells into the joint and hope they make it to where you want them to go. However, there's a basic science research study from back in 2008 that showed that if you place the cells directly on the cartilage lesion, you get better results.

However, there's a problem with these patients who have a cartilage lesion on the back of the kneecap. How can you get cells to attach there? That's something that, believe it or not, has taken many years to perfect. Let me explain.

The Superman Injection Technique - Level 3 Knowledge

Many years ago, I came up with a way to inject the backside of the kneecap and use gravity to adhere the cells just as in the study discussed above. We place the patient face down in "superman" position and offset the knees so one can be x-ray 'ed in a lateral position (see left). As you can see in the left lower picture, I then take the kneecap and pull it outward and place the needle on the backside of the patella (right picture). The top pics are the x-ray images demonstrating that the contrast is going where I want the stem cells (darker areas), on the backside of the kneecap.

All of this might seem like commonsense, and easy, but it's been surprisingly difficult to perfect. Meaning it's easy to place the needle in the wrong spot, to try this from the other side (medial-which doesn't work) or have the contrast (the stuff I can see on the x-ray that will predict where the stem cells will flow) go to the wrong place. However, now it's dialed in.

Also, realize that there is no textbook for these types of injections. Meaning, we have had to develop many of them from scratch. For example, before the concept of stem cells adhering to a surface, it just didn't matter where you decided to place steroid or anything else injected into a joint. So, these procedures are all brand new. In fact, I helped form a non-profit to teach these skills called the Interventional Orthopedics Foundation or IOF.

Top three questions to ask the clinic:

1. ***How will my cells be injected? Blind, with only ultrasound, or does the clinic frequently use both ultrasound and fluoroscopy?*** You obviously want a clinic that uses ultrasound and fluoroscopy. I have seen some funny reasons thrown around for why clinics who don't have fluoroscopy state they don't use it, because it kills stem cells. That's not at all true, as if that

happened, then the hundreds of thousands of patients a year who get fluoroscopically guided spine injection or procedures would get quite sick!

2. ***Will the doctor drain an effusion in the joint if I have one?*** You want the answer to this question to be "Yes". You need ultrasound imaging to see this, so they need to be able to use ultrasound.
3. ***Can your doctor inject the knee ACL using fluoroscopy?*** I included this one as it usually separates the wheat from the chaff really quickly. The clinic may try to tell you that the doctor doesn't need any imaging to inject the ACL, he or she is just that good. This is a level 0 clinic, so go elsewhere. Or they may try to tell you that the doctor can do it with ultrasound, but that doesn't work either because if the ligament is torn, the part you can see with ultrasound isn't the part that needs most of the cells. Again, you want to hear that the doctor has done many cases of treating torn knee ACLs with fluoroscopy.

Conclusions?

Now you know which questions to ask! As you can see, there's an immense amount of knowledge and experience that go into effective Orthobiologic procedures. Frankly, this little book just scratched the surface, so if you want to know more, consider reading my Orthopedics 2.0, Knee, Spine, or Shoulder books. In the meantime, realize that the patient that avoids getting scammed is the one that takes the time to their homework!