VOLUME 6, ISSUE 4 | FEBRUARY 2, 2010

Orthopedics This Week

week in review

05 **Cry, The Beloved Surgeon** ♦ Surgeons came home from Haiti disillusioned and angry over U.S. government relief efforts. Military surgeons say their civilian colleagues have little experience in disaster medicine and should leave it to the pros. They find common ground in *OTW*. See what good has come from this.

09 **Stem Cells Inhibit Bone Carcinomas** ♦ Using Mesenchymal Stem Cells (MSC) derived from bone-marrow, University of Alabama researchers report a 90% inhibition of bone carcinoma tumor growth. The study was really pretty clever and highlights yet another use for MSCs. Check it out.

12 **Don't Expose Your Tail: Reporting Endorsement** ♦ Funny lingo, serious consequences. Attorney Steve Harris reviews the ins and outs of the two types of professional liability insurance, claims made and occurrence…and what you can do about the risks involved.

the picture of success

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breaking news

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Changes Needed to Ortho Training Programs

For all the news that is Ortho, read on.

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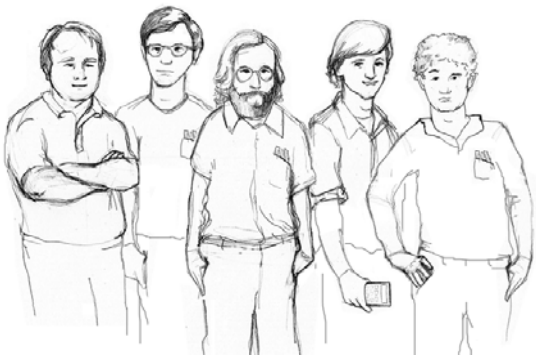

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Spine Procedure U.S. Market Reports	Code
Spine Fusion	
Anterior cervical fusion	81.02
Posterior cervical fusion	81.03
Anterior dorsal and dorsolumbar fusion	81.04
Posterior dorsal and dorsolumbar fusion	81.05
Anterior lumbar fusion	81.06
Lateral lumbar fusion	81.07
Posterior lumbar fusion	81.08
Spine Refusion	
Posterior lumbar refusion	81.38
Other Spine Procedure	
Discectomy	80.51
Decompression	03.09

Large Joint Reconstruction	Code
Total Hip Replacement	81.51
Total Knee Replacement	81.54
Revision of Hip Replacement	81.53
Revision of Knee Replacement	81.55
Excision of Semilunar Cartilage	80.6
Cruciate Ligament Repair	81.45
Synovectomy of the Knee	80.76
Removal of Implanted Device Tibia/Fibula	78.67
Hemiarthroplasty	81.52
Hip Resurfacing	00.85

Extremity Market Reports	Code
Ankle Fusion	81.11
Triple Arthrodesis	81.12
Subtalar Fusion	81.13
Total Shoulder Replacement	81.80
Partial Shoulder Replacement	81.81
Rotator Cuff Repair	83.63
Total Ankle Replacement	81.56
Open Reduction of Fracture Radius & Ulna w/ Internal Fixation	79.32
Open Reduction of Fracture Humerus w/ Internal Fixation	79.31
Open Reduction of Fracture Tarsals & Metatarsals w/ Internal Fixation	79.37

(2004-2008 U.S. Procedure, Sales, Charging and Demographic Data as derived from Medicare AND Private Payer datasets)

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Orthopedic Power Rankings

Robin Young's Entirely Subjective Ordering of Public Orthopedic Companies

This Week: The upcoming weeks or months will create buying opportunities, which is another way of saying that ALL equity valuations are being pushed down. Investors have very little confidence in the near-term future so discount rates are rising. There has been an across the board shift in sentiment lately.

Rank	Last Week	Company	TTM Op Margin	30-Day Price Change	Comment
1	2	Medtronic	31.09%	-4.03%	A 31% operating margin PLUS 2nd lowest combination of valuation measures is compelling. #1 this week.
2	1	Integra LifeSciences	15.37	2.87	The Street, in the form of analysts, is lining up behind IART. Looking now for either the next transaction or increased organic growth.
3	4	Symmetry	11.48	8.78	The last insider stock transaction was a buy—six of the nine past insider trades were buys. Up on spot this week.
4	3	Stryker	23.5	1.9	SYK has 7% increase in 4Q sales; 39% increase in 4Q operating profit. Virtually all growth is in spine.
5	5	Zimmer	28.1	-6.41	Large joint growth was actually good. Analysts weren't too happy, but inside the numbers conditions are encouraging.
6	8	Johnson & Johnson	26.94	-3.2	Truly, this market is nurturing its fears and in that environment, JNJ's low P/E and high dividend yield is attractive.
7	6	Smith & Nephew	22.42	-2.21	The only headlines these days are about low margin wound healing. Need some ortho news.
8	7	Wright Medical	6.61	-7.07	Like passing a kidney stone, the 4Q results have to get out of the way to make shareholders feel good.
9	9	Exactech	12.61	-10.23	Snares a "buy" recommendation from Brigantine research. Brigantine? No wonder EXAC is down 10%.
10	10	CONMED	6.92	-9.2	Early signals from the market are that the announcement this week will be cautious...at best.

Orthopedics This Week

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Robin Young's Orthopedic Universe

Top Performers Last 30 Days

	Company	Symbol	Price	Mkt Cap	30-Day Chg
1	Capstone Therapeutics	CAPS	$0.88	$36	25.7%
2	Regen Biologics	RGBO.PK	$0.15	$1	25.0%
3	ArthroCare	ARTC	$26.65	$714	13.4%
4	Osteotech	OSTE	$3.38	$61	9.4%
5	Symmetry Medical	SMA	$8.92	$319	8.8%
6	Integra LifeSciences	IART	$38.40	$1,090	2.9%
7	Stryker	SYK	$51.92	$20,650	1.9%
8	Mako Surgical	MAKO	$11.48	$381	0.8%
9	Orthovita	VITA	$3.64	$278	0.3%
10	Smith & Nephew	SNN	$49.92	$8,820	-2.2%

Worst Performers Last 30 Days

	Company	Symbol	Price	Mkt Cap	30-Day Chg
1	Alphatec Holdings	ATEC	$4.42	$232	-16.4%
2	RTI Biologics Inc	RTIX	$3.16	$172	-16.2%
3	NuVasive	NUVA	$27.60	$1,050	-15.8%
4	TranS1	TSON	$3.24	$67	-15.0%
5	Exactech	EXAC	$16.15	$207	-10.2%
6	CONMED	CNMD	$21.51	$626	-9.2%
7	Wright Medical	WMGI	$17.88	$691	-7.1%
8	Kensey Nash	KNSY	$24.22	$269	-6.7%
9	Zimmer Holdings	ZMH	$56.32	11,990	-6.4%
10	Medtronic	MDT	$42.89	$47,380	-4.0%

Lowest Price / Earnings Ratio (TTM)

	Company	Symbol	Price	Mkt Cap	P/E
1	Symmetry Medical	SMA	$8.92	$319	8.79
2	Medtronic	MDT	$42.89	$47,380	13.47
3	Johnson & Johnson	JNJ	$62.86	$173,440	13.58
4	Kensey Nash	KNSY	$24.22	$269	13.74
5	Zimmer Holdings	ZMH	$56.32	$11,990	14.00

Highest Price / Earnings Ratio (TTM)

	Company	Symbol	Price	Mkt Cap	P/E
1	Smith & Nephew	SNN	$49.92	$8,820	80.77
2	Synthes	SYST.VX	$129.07	$15,318	40.13
3	RTI Biologics Inc	RTIX	$3.16	$172	38.71
4	NuVasive	NUVA	$27.60	$1,050	25.27
5	ArthroCare	ARTC	$26.65	$714	23.45

Lowest P/E to Growth Ratio (Earnings Estimates)

	Company	Symbol	Price	Mkt Cap	PEG
1	Orthofix	OFIX	$30.13	$516	0.82
2	CryoLife	CRY	$6.29	$179	0.84
3	Symmetry Medical	SMA	$8.92	$319	1.13
4	Exactech	EXAC	$16.15	$207	1.21
5	Medtronic	MDT	$42.89	$47,380	1.23

Highest P/E to Growth Ratio (Earnings Estimates)

	Company	Symbol	Price	Mkt Cap	PEG
1	NuVasive	NUVA	$27.60	$1,050	2.63
2	Johnson & Johnson	JNJ	$62.86	$173,440	1.83
3	*Average*			*$11,385*	*1.66*
4	RTI Biologics Inc	RTIX	$3.16	$172	1.58
5	Smith & Nephew	SNN	$49.92	$8,820	1.57

Lowest Price to Sales Ratio (TTM)

	Company	Symbol	Price	Mkt Cap	PSR
1	Osteotech	OSTE	$3.38	$61	0.70
2	Symmetry Medical	SMA	$8.92	$319	0.81
3	CONMED	CNMD	$21.51	$626	0.92
4	Orthofix	OFIX	$30.13	$516	0.95
5	Regen Biologics	RGBO.PK	$0.15	$1	0.98

Highest Price to Sales Ratio (TTM)

	Company	Symbol	Price	Mkt Cap	PSR
1	TiGenix	TIG.BR	$5.33	$131	183.29
2	Mako Surgical	MAKO	$11.48	$381	14.38
3	Synthes	SYST.VX	$129.07	$15,318	9.36
4	Kensey Nash	KNSY	$24.22	$269	3.37
5	NuVasive	NUVA	$27.60	$1,050	3.29

Cry, The Beloved Surgeon

By Walter Eisner

Survivors waiting for care/photo courtesy: Dean Lorich, M.D.

When Drs. Dean Lorich, Soumitra Eachempati and David Helfet and their team rushed to Haiti immediately after the earthquake, they did so with all the hope and altruism that made them want to be surgeons in the first place.

Dr. Lorich told *OTW* the team flew to Haiti on January 15 because they saw a chance to offer their skills where they were needed most and on a scale where they could help the most people.

By the time the team practically fled on the 19th in the back of a pick-up truck with armed Jamaican guards, they left disillusioned, angry, and worst of all, with a feeling in their gut that they had abandoned their patients. In fact, they were lucky to get out alive and unharmed.

As the crowd saw the team packing up to leave, things became very tense, said Lorich, and the Jamaican guards with M-16s escorted the team to safety.

Naïve Expectations

When the team got back to New York, Lorich and his colleagues decided they needed to warn fellow surgeons who wanted to go to Haiti, that if they thought they were going to come in as white knights in shining armor, they were naïve and would be sadly disappointed.

Lorich, Eachempati and Helfet wrote a letter distributed to the media offering a biting critique of the U.S. rescue effort, comparing it to the inadequate response to Hurricane Katrina in New Orleans. (Click here to read the entire letter.)

Challenges and Risks

Their criticism stung some military surgeons who took umbrage with their civilian counterparts and contacted *OTW* after the criticism became public.

One military surgeon wrote to *OTW*, "Civilian physicians have little training or experience in disaster medicine. As outlined by Dr. Lorich, it is a naïve attempt to help. Best left to our military and experienced agencies."

In fact, one military surgeon told us that civilian surgeons dropping into a mass casualty situation in a third world country where the infrastructure

has been destroyed could actually end up hurting patients. Without proper planning, security and extraction procedures, civilian surgeons could become part of the disaster and end up leaving patients dying for lack of proper follow up care.

Emotions are running high as both civilian and military medical professionals do their best to treat patients in an untreatable environment.

Lack of Coordination During Chaos

In interviews with both sides it quickly became apparent that official government/military and civilian efforts to save patients in this mass casualty situation, lacked coordination. Civilian doctors jump into an unsecured, primitive and non-existent medical infrastructure, while military doctors work through a deliberate, highly planned and secured process. But neither side talks to the other until the military has to tell someone their plane can't land at an overtaxed airport because of higher priorities.

AAOS Offers "Good Offices"

We figured it would take a presidential effort to get civilian and military medical relief efforts to coordinate with each other. So we called Joseph Zuckerman, M.D., president of the American Academy of Orthopaedic Surgeons (AAOS).

"AAOS will absolutely do whatever it can and offer all our resources and assets to help our members coordinate with official military efforts," said Zuckerman. "In fact, coordinating our members' efforts with existing relief efforts is what we have been trying to do all along."

OTW has learned that some efforts have already begun to coordinate efforts to integrate qualified civilian physicians into the mass casualty response structure.

Lorich's Warning

The experience of the HSS team is informative as other civilian physicians think about the ways they want to assist the medical relief efforts. The quotations below are all from the team's letter.

"We wanted to provide acute trauma care in the midst of an orthopaedic disaster. Our plan was to be at a hospital where we could utilize our capabilities as trauma surgeons and treat the acute injuries involved in an orthopaedic disaster…"

> *"We thought our plan was a good one and we soon learned that we were incredibly naïve. Disaster management on the ground was nonexistent. The difficulties in getting in despite the intelligence we had from people on the ground and Dr. David Helfet's high political connections with Partners in Health, as well as the Clintons, only portended the difficulties we would have once we arrived."*

The team left New York on a Friday, but didn't get into Haiti until Sunday afternoon because the landing slot was cancelled by the military.

Once on the ground, Lorich said the team and their supplies were taken to the General Hospital. They believed this hospital was up and running with two functioning operating rooms. They found out otherwise. The hospital had been severely damaged and had no running water and limited electrical power supplied by a generator.

"Surgeries were being performed in the equivalent of a large storage closet, consisting only of amputations with hack saws." They realized that the facility would not accommodate their expertise and equipment.

They quickly went to another hospital a couple of miles away with running water, electricity and two functional operating rooms. There they found approximately 750 patients lying on

the floor, "with pus dripping out of open extremity fractures and crush injuries. Some wounds were already ridden with maggots."

The only local staff was a ragtag group of voluntary health providers who, like the HSS team, had made it there on their own.

> *"We had no idea that the pre-existing medical infrastructure of the country was virtually non-existent."*

The group called back to New York for more supplies and a plane landed on Sunday night at the airport with the supplies. On the way to the hospital, the supplies were hijacked.

Round-the-Clock Surgery

Their plan was for a round-the-clock surgery marathon session with the idea of being extracted Tuesday morning. They operated for 60-plus hours with almost no breaks, exhausting themselves, their supplies and their equipment. They completed around 100 surgeries, consisting mainly of amputations, external fixations of broken limbs and soft tissue debridements, many of which were done on children and babies.

The plane that was bringing a new team and supplies and that was to extract them had its slot cancelled at 6 am Tuesday morning.

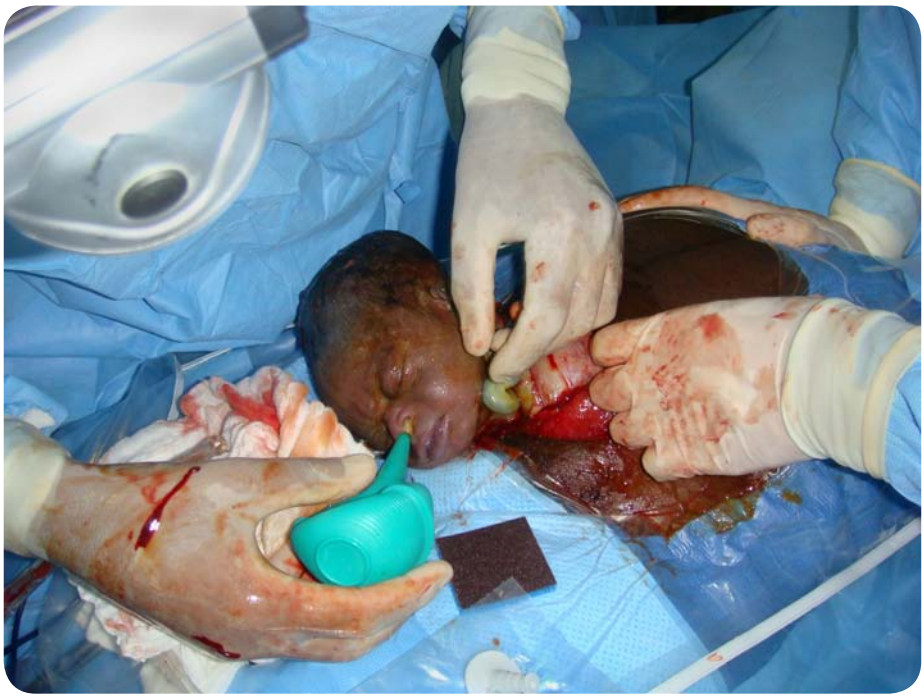
"On Tuesday morning we found a huge number of new patients as the Haitian community had heard that we were trying to save limbs and not just amputate them. Families were bringing their injured from other hospitals. The hospital was forced to undergo a lockdown, closing its gates to the outside angry and frustrated crowd. We also noted that many of the patients we had operated on were becoming septic and would require additional surgeries."

They finished operating at noon on Tuesday and for their last surgery, assisted an obstetrician on a Caesarian section and subsequent resuscitation of a newborn who was not breathing.

"Untenable"

The group decided that the situation at the hospital was untenable as their supplies were running out, they were beyond exhaustion and safety was rapidly becoming a concern. On top of that, they had no firm extraction/resupply plan.

They needed the Jamaican soldiers to escort them out of the hospital as the crowd saw the team abandoning


Last operation/photo courtesy Dean Lorich, M.D.

Team packs up and leaves/photo courtesy: Dean Lorich, M.D.

the hospital. The group made it to the airport on the back of a pick-up truck.

At the airport, they got onto the tarmac, hailed a commercial plane that was returning to Montreal and had a private jet pick them up from there.

"Intense Questioning Merited"

Upon their return to New York the team decided to speak out about "the complete lack of organization on the ground…The fact that the military could not nor would not protect the critical resupply medical equipment on Sunday or let the Tuesday flight come in is devastating and merits intense questioning."

"The lack of support for our operation by the United States is shocking and embarrassing and shows how woefully unprepared we are for the realities of disasters such as these. We came to understand that ours was an isolated operation which is a feature that may work in a mission but not in a disaster situation. We first thought we were support for those at the helm and soon realized we were not only the first responders, we were almost the only early responders with the critical expertise and equipment to treat an orthopedic disaster such as this."

"Medical doctors are coming into the country with no plan of what they are going to do, and nobody directing them how to do it. Surgeons that expect to just show up and operate are mistaken as to what their role would be and without a complement of support staff and supplies they would be of limited to no value."

> *"We left feeling as if we abandoned these patients, the country and its people and we feel terrible. Our role now being back in New York is to expose the inadequacies of the system to the media in the hopes of effecting a change in the system immediately."*

As the civilian and military medical communities begin the efforts to work together in a more coordinated fashion, some good may come from this experience. We'll keep you posted.

Stem Cells Inhibit Bone Carcinomas

By Robin Young

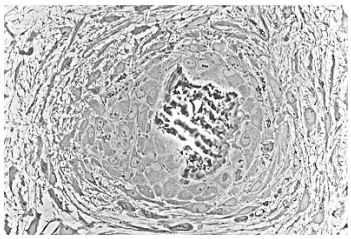
Using Mesenchymal stem cells (MSC) derived from bone-marrow, University of Alabama researchers report a 90% inhibition of bone carcinoma tumor growth.

The study, which appeared in the December 1, 2009, issue of *Clinical Cancer Research,* had nine authors but the lead researcher was Dr. Diptiman Chanda from the Department of Pathology at the University of Alabama.

His hypothesis was that the ability of MSCs to differentiate into osteoblasts (the single nucleus cells that grow bone) could, in a very clever way, obstruct bone cancer cells.

You Say Osteoblasts, I Say Osteoclasts…Let's Work the Whole Thing Out

First, it's important to know what osteoblasts are and what they do. Osteoblasts produce the raw material for bone including a particular family of proteins—bone sialoprotein and osteoprotegerin (OPG). Dr. Chanda focused on that last item—the osteoprotegerins



Osteoblasts creating rudimentary bone tissue / Robert M. Hunt

(OPG). Osteoprotegerins are a type of protein or cytokine that blocks the interaction between bone creating cells (osteoblasts) and bone absorbing cells (osteoclasts). Bottom line, OPG can slow down or even stop bone loss.

What does this have to do with bone cancer? It turns out that OPGs are a "decoy" receptor for one of the key chemical links (RANKL) responsible for bone maturation and resorption. Dr. Chanda's hypothesis was that MSCs, which express OPG, could interrupt this bone maturation link and, as a result, also interrupt bone metastasis or cancers.

Bone cancers are often successors to such cancers as breast cancer or prostate cancer. Dr. Chanda's research is in prostate cancer and that, of course, has led him and his colleagues to digging into the mechanisms of osteoblasts and osteoclasts.

So, when a pancreatic or breast cancer metastasizes into a bone cancer, one of the markers that physician's look for is osteolysis—or the rate at which bone is resorbed into the body. If bone is disappearing at an overly rapid rate or is being resorbed at an unusual rate, that's a sign of disease.

The most current clinical research into bone cancer is showing that prostate cancer generated osteoblast lesions are preceded by osteolysis. Therefore, Dr. Chanda hypothesized: preventing osteolysis with the OPG protein from Mesenchymal stem cells would reduce complications of bone metastasis.

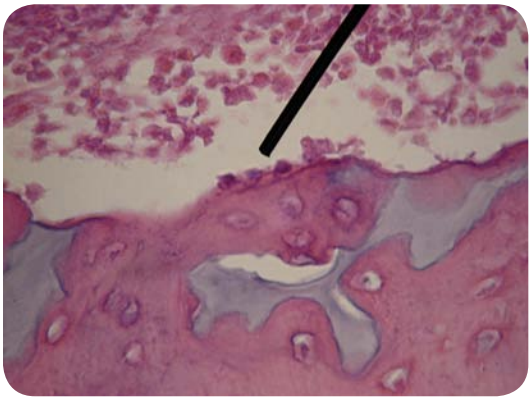
That's the idea at any rate.

Testing, Testing, Hypothesis Testing!

Now for the test. Drs. Chanda, Isayeva, Kumar, Hensel, Sawant, Ramaswamy, Siegal, Beatty and Ponnazhagan went to work. Obviously, it takes a village to do MSC research.

Here is the hypothesis: Unmodified mesenchymal stem cells can prevent osteolytic bone lesions and therefore interrupt the bone carcinoma process.

Here's the study design: Human prostate cancer cells (line PC3) were implanted into the tiny little tibia bones of severely immunodeficient mice. These are mice that are genetically engineered to be unable



Three osteoblast visble at 400x in developing bone / Wbensmith

to mount, coordinate or sustain an immune response to disease. These are mice, in other words, that are really helpful for disease research. They get sick fast. And they get sick precisely in the way that researcher need in order to test drugs and other biotech therapies for dozens of disease states—including cancers and the autoimmune diseases.

In this test, very quickly after receiving the human prostate cancer cells, the immunodeficient mice developed raging bone carcinomas in their tibias. One day after injecting the mice with human prostate cancer cells (PC3) Dr. Chanda and his colleagues then injected unmodified human Mesenchymal stem cells (derived from bone marrow) into the mice. Unmodified means that the MSC's were not cultured or changed. They were the same as bone marrow stem cells that surgeons routinely use and rely on when they aspirate bone marrow from their patients in surgery.

The MSCs were injected and immediately went to work expressing OPG—the study protein. The researchers tracked the progression of the OPG proteins using some very sophisticated markers—bioluminescence imaging, micro–computed tomography, immunohistochemistry, and histomorphometry.

Here's the fascinating part; not only were the tibia tumors inhibited by the OPG expressed by the Mesenchymal stem cells, but each mouse had new woven bone forming around the tumor cells in the tibia. That new woven bone prevented osteoclasts genesis! And the results were highly statistically significant ($P < 0.001$).

Using the bioluminescence and other tracking technologies the researchers noticed that the MSC's "homed" into the metastatic sites as if they were specifically drawn to the cancerous inflammation. Once at the location, the MSC's then began to "read" the surrounding signals and started to change and differentiate into osteoblasts. As the MSC's were changing from undifferentiated stem cells into bone osteoblasts, they released osteoprotegerin (OPG). The OPG, in turn, successfully acted as the "decoy" receptor to RANKL, the ligand link for bone maturation and osteoclast proliferation, and disrupted the tumor activity.

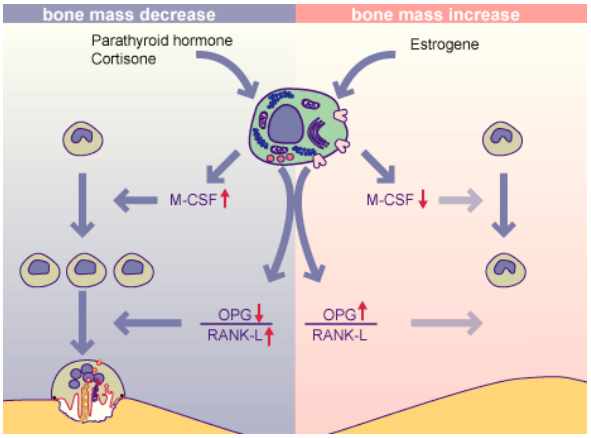
Result: 90% Tumor Inhibition!

At four weeks post-injection, there was 90% inhibition of bone carcinoma tumor growth using the adult human bone marrow derived Mesenchymal stem cells.

Why does this happen? Dr. Chanda and his colleagues are hypothesizing that an absence or lack of the amount of naturally occurring Mesenchymal stem cells in patients set the stage for bone carcinomas. By adding concentrations of MSCs, clinicians have a new weapon in the battle with bone cancers.

After the mice were sacrificed and the bones were studied under microscope, Dr. Chanda and his colleagues noted that the injected adult bone marrow derived Mesenchymal stem cells also acted to preserve trabecular and cortical bone structures in the mice. In addition, the histologies confirmed that osteoclast proliferation had been inhibited.

Finally, the researchers ran one more test to really check to see if the MSCs were truly as effective as they seemed



Drawing courtesy of University of Friborg © Université de Fribourg

to be. This was, in effect, a dose response test. Where the researchers injected MSCs into the mice tumors one day after the tumors were triggered, in this follow up test, the researchers waited two weeks before injecting MSCs.

Indeed, when adult human MSCs were injected two weeks after the PC3 cells were injected, the mice outcomes deteriorated as compared to the first test. Specifically, when injected two weeks after PC3 cells were introduced, the MSCs were NOT effective in inhibiting tumor growth. Testing further at one week post PC3, the injections of MSC's successfully resulted in new, woven bone which then surrounded the tumor. Chanda and his colleagues then subjected the new woven bone to mechanical strength testing and found that it was similar in strength to normal bone.

Another critical conclusion reached by the researchers is that the ability of the injected adult MSCs to differentiate into bone cells (osteoblasts) was NOT due to the increased expression or upregulation of bone growing genes (osteogenic genes). Instead, said Chanda, it was likely due to the abnormally high rate of bone maturation and loss—enhanced osteoclastogenesis in other words—and that the MSCs somehow sensed that and began to change and express OPG accordingly.

Dr. Chanda primary conclusion, of course, is that MSCs can play a very effective role in reducing the tumors from bone carcinomas. The researchers' secondary conclusions were that the clinical task when confronted with a patient with a bone carcinoma is to find ways to augment the patient's existing store of MSCs. If a shortage of MSCs creates the conditions for bone carcinomas in patients with breast or prostate cancers, then injections of either autologous (bone marrow or adipose derived) stem cells or allograft stem cells could well slow or arrest the progression of bone carcinomas.

For more information - Clin Cancer Res 2009;15(23):7175–85 Chanda D, Isayeva T, Kumar S, Hensel JA, Sawant A, Ramaswamy G, Siegal GP, Beatty MS, Ponnazhagan S

Don't Expose Your Tail: Reporting Endorsement

By Elizabeth Hofheinz, M.P.H., M.Ed

Kanarienvogel / Wikipedia Commons

Orthopedists know everything about bones…but do they know anything about tails? Tail coverage, to be exact. The fact is, it pays—literally—to be savvy about this nuanced part of the insurance world.

Steve Harris, an attorney with McDonald Hopkins, LLC in Chicago, explains, "The terms tail coverage and reporting endorsement are interchangeable. No matter what you call it, however, it can greatly impact an orthopedist's income.

Two Types of Liability Insurance

"There are two kinds of professional liability insurance that are relevant for orthopedists, namely, 'claims made' and 'occurrence.' With the former there is a two part test for someone to be covered: first, the doctor needs to have this coverage in place when the negligent act occurs; second, when you are notified of a claim, you must be covered by the same carrier. Doctors often don't know if they will be named in a suit, so the alleged negligent act occurs, and then two years later, the doctor is served with the lawsuit. The second part of the 'and' test has to be in existence…many doctors get caught in the switch from one job to another and stand to lose a significant amount of money."

"Occurrence coverage," says Harris, "is much simpler. If you have this and the act occurs, then you are covered, plain and simple. Let's say you're in residency or fellowship, make a mistake, and then head off to another city. If you are tagged with a suit that initiated when you were in training, and were under an occurrence based policy, you are covered in perpetuity. The vast majority of hospitals have occurrence based coverage."

Think the lead doctor in your practice is a stand in for Genghis Khan? Or, perhaps you're interested in pursuing an academic career? Do some homework before you clean out your office, says Harris. "More than 90% of policies in existence for private groups are claims made. A typical example of what happens is as follows: there is a six person orthopedic practice with a claims made policy and someone decides to leave. This automatically means that this person is not going to meet the two part test. This often happens in cases where orthopedists have 'jumped ship' for another practice that carries claims made coverage. This is a major gap in coverage that leaves the doctor quite vulnerable."

Who Will Buy Your Tail?

While the lingo may sound a bit humorous, the results are serious indeed. Steve Harris: "The major issue is, 'Who is buying your tail?' Ensuring

What If Mother Nature Had Used Polymer Barriers?

that you are covered begins with the contract. Payment of tail coverage converts a claims made policy to an occurrence policy, something that you should do whenever you leave a practice. The contract is going to rule who has the responsibility of purchasing tail, so when signing an employment contract, say to the group, 'If you let me go without cause, I want you to buy my tail. However, if I walk away for no reason, I will buy the tail.' There may also be a vesting schedule strategy. As an example, each year you are with a practice 20% of the tail premium is paid, so in five years you are fully vested."

Sometimes, lady luck kicks in. "If you're in practice A (which has claims made) and move to practice B, and by pure chance practice B has the same insurance company, you can get seamless coverage. This means that you don't have to buy tail because the insurance company underwrites this on a per physician basis. This materially affects the next phase of someone's career. If one practice pays a $200,000 salary and another pays $250,000, with everything else being equal, if you have to pay a $75,000 tail, that's something you're going to want to factor in. Remember that when you're in discussions about a new job, it is fair to ask who the underlying carrier is."

There are also times when it's good to chase your tail. Steve Harris: "Let's say that you've negotiated well and the practice is going to be responsible for paying all of your tail coverage. After awhile, things change, so you leave and fortuitously go to another practice with the same underlying carrier. While this means you don't have to pay tail, the contract with your former practice did say that the group had the responsibility of paying tail for you.

"Those doctors might be thinking, 'Great. He went to another practice that has the same carrier as ours. We dodged a bullet.' But in that situation, your attorney can notify the group that they do indeed have to buy tail. They will inevitably respond with, 'But Dr. X doesn't need tail,' to which the attorney should say, 'The contract doesn't say that you will pay it if he needs tail…it says if you let him go without cause you shall buy the tail.'"

> ***"The magic of this is that in most groups you are on an 'eat what you kill' formula, meaning, in part, that you are saddled with all your expenses and those get subtracted from your productivity. If you force your old group to buy tail, then you are underwritten as a first year doctor because all of the claims history is wiped out. A first year doctor with no claims is underwritten for a fraction of the cost. When you emerge from fellowship, premiums increase for the first five years or so then level off. So if you come in as a fifth year making $250,000 and the new practice charges you for the cost of annual professional liability coverage, and you get the prior group to pay the tail, you're charged only a fraction of the yearly cost of a mature policy, and each year you're taking home a higher salary."***

A fundamental difference between claims made and occurrence? Cost. "Claims made policies are a lot less expensive per year because when you're underwriting claims made, you're not underwriting *future* claims. Every year is a snapshot because the covered individual has met the second part of the test. So if I'm an underwriter providing an occurrence policy, and someone works for one year, then I am forever covering that risk. Occurrence policies can actually be twice as expensive as claims made policies."

Remember, says Harris, it all starts with the contract. That is your opportunity to shift the risk to the practice and protect your income and nest eggs.

company news

DePuy and Devices Lead J&J

Johnson & Johnson's top executive, Bill Weldon, and its top financial officer, Dominic Caruso, had to tell Wall Street analysts on January 26 that sales decreased in 2009 for the first time since 1934. That's the Depression in case anyone forgot.

Ney leading his men / Wikimedia Commons

"It was one of the most difficult years in the company's history," J&J Chairman Bill Weldon told. Weldon attributed the decline to a weak economy and patent expirations for some of their prescription drugs. Sales slipped 3% to $61.9 billion from $63.75 billion.

While the consumer products and pharmaceutical divisions struggled, the behemoth's medical device segment pulled the wagon by growing 11.8% for the fourth quarter of 2009 and 1.9% for the year. It is now J&J's top division in revenues.

And, like Stryker, DePuy's Orthopaedic and Spine divisions saw a healthy acceleration of sales growth in hips, knees and spine for the quarter. On an operational basis, hips were up 12% (15% U.S.), while, according to Weldon, continuing to expand the company's share of the market. Knees grew by 9% (10% U.S.) and spine rose 9% (9% U.S.).

Weldon assured analysts that the year was behind them and strategic actions taken over the past two years prepared the company for a resumption of sales increases. When asked if he thought J&J had turned the corner, Weldon replied, "When you look at early indications, things are picking up somewhat. I still think we have a lot of challenges ahead of us that are going to continue to impact this industry.

With $14.2 billion in free cash flow, the company has to find lots of productive things to do with the money in 2010. With devices and diagnostics taking over as the main driver of sales, they are well capitalized to make significant acquisitions.

—WE (January 26, 2010)

DePuy	4Q09s		2009	
	Sales ($ in Millions)	% Change	Sales ($ in Millions)	% Change
Total	$1,473	up 14.2	$5,372	up 4.6
U.S.	$828	up 11.3	$3,096	up 7.8
International	$645	up 18.1	$2,276	up 0.6
Hips*		up 12		
Knees*		up 9		
Spine*		up 9		

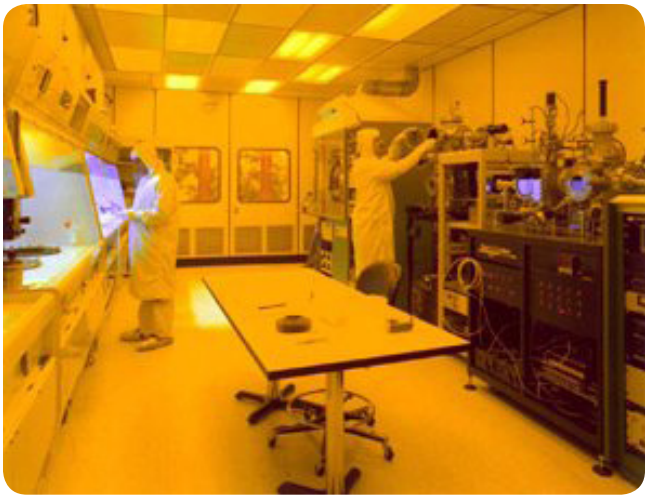
** Product sales are operational Source: Johnson & Johnson*

company news

Millstone: New Clean Room

Way beyond Windex… Millstone Medical Outsourcing has announced plans to open a state-of-the-art, 5,400 square foot clean room at its headquarters in Fall River, Massachusetts. Combined with the company's existing clean room space, this makes for 8,000 plus square feet overall.

Kelly Lucenti, President of Millstone, told *OTW*, "In 2009, Millstone Medical Outsourcing's sterile packaging volume increased by 50%. The additional business comes from new and existing customers and follows a trend in the medical device industry towards more sterile packaging."



Clean Room/Wikimedia Commons

The clean room, which will be operational by the end of next month, is in the process of completing validations (the new Fall River facility is designed to be ISO certified as a Class 7/Class 10,000 clean room). As indicated by Millstone, it will be equipped with industry-leading Sencorp bar and tray sealers and two top-of-the-line Branson ultrasonic cleaning systems complete with passivation capabilities. These two cleaners are sourced by a Siemens Reverse Osmosis (RO) high purity water system. The RO system is equipped with ultra-violet sterilizers and filters to further enhance water purification.

The clean room will also feature a Lighthouse continuous Particulate Monitoring System (PMS) to help maintain Class 10,000 standards. In addition to particulates, temperature, humidity, and room pressure will be monitored via a web-based application. The clean room offers a flexible layout with five pass-through chambers and two air-lock chambers as well as air, electric, and nitrogen utility hook ups throughout the room.

Commenting to *OTW* on passivation, Lucenti noted, "The advanced nitric acid passivation system is designed to clean a variety of metal components and products and create a protective coating prior to packaging. As a stand-alone service or in conjunction with a laser etching process, nitric acid passivation is available to maximize the corrosion resistance of orthopedic devices and spinal implants made from stainless steel, titanium, cobalt chrome, etc."

"We are excited to begin clean room operations at our Fall River headquarters," said Christopher Ramsden, Chief Executive Officer, in the news release. "The purpose of adding another advanced clean room is to provide our customers with access to increased high quality services. As our customers grow, we are committed to enhancing our facilities, personnel, and processes to accommodate their needs."

—EH (January 28, 2010)

company news

CryoLife Advisor Linked To Scandal

The counsel to CryoLife, the Georgia-based company that has launched a hostile takeover of Minnesota-based biomaterials company Medafor, was the unwitting link in an insider stock trading scandal according to various media reports and news stories from the Reuters news service. Direct access to media reports is available at the online news agency, Media Bistro and its daily news stream PRNewser (http://www.mediabistro.com/prnewser/).

Nina Devlin, an advisor to CryoLife and the ***contact person*** for Medafor shareholders (!), has been tied directly to former Lehman Brothers broker (and Ms. Devlin's husband) Matthew Devlin who was charged in 2008 with insider trading. He was specifically accused of sharing information **about his wife, Nina Devlin's work on behalf of public relations clients** of her previous firm, the international Brunswick Group.

Nina Devlin / www.mediabistro.com

Ms. Devlin has since left Brunswick Group and last we heard was a Senior Vice President with the Edelman Public Relations firm.

According to a December 18, 2008, Reuter's article U.S. authorities charged Matthew Devlin, of New York City, with participating in an insider trading scheme which involved using information obtained **illegally** from his wife Nina Devlin without her knowledge and then passing it along to third parties.

Matthew Devlin, 35, entered a plea of guilty on December 16, 2008, before U.S. District Judge Barbara Jones to a complaint charging him with four counts of conspiracy to commit insider trading and one count of securities fraud.

Nina Devlin was not charged and, according to all accounts, did not know about her husband's illegal activities. The information, according to authorities, netted the insider traders, including a 1994 Playboy Playmate $4.8 million. Matthew Devlin, himself, allegedly received cash, a Cartier watch, a widescreen TV and tuition at a Porsche driving school.

Apparently, Nina Devlin's work on behalf of clients like CryoLife—M&A transactions, proxy fights, activist investor situations, IPOs, and crisis & litigation assignments—was used by her husband and his cohorts to trade securities and gain illegal profits.

All told, approximately 13 of Nina Devlin's clients were affected by her husband's activities. In the news reports of the details of the case, Nina Devlin was referred to as the "golden goose." One of the emails between the co-conspirators said: "We need the goose to pop its head out and show us the biz. Where has my goose gone? Come back little goose."

—RRY (January 28, 2010)

company news

Memphis Snags New Ortho Business

The economic development teams in Memphis, Tennessee, and Warsaw, Indiana, compete to bring new orthopedic businesses to their communities as they vie for the title of orthopedic capital of America.

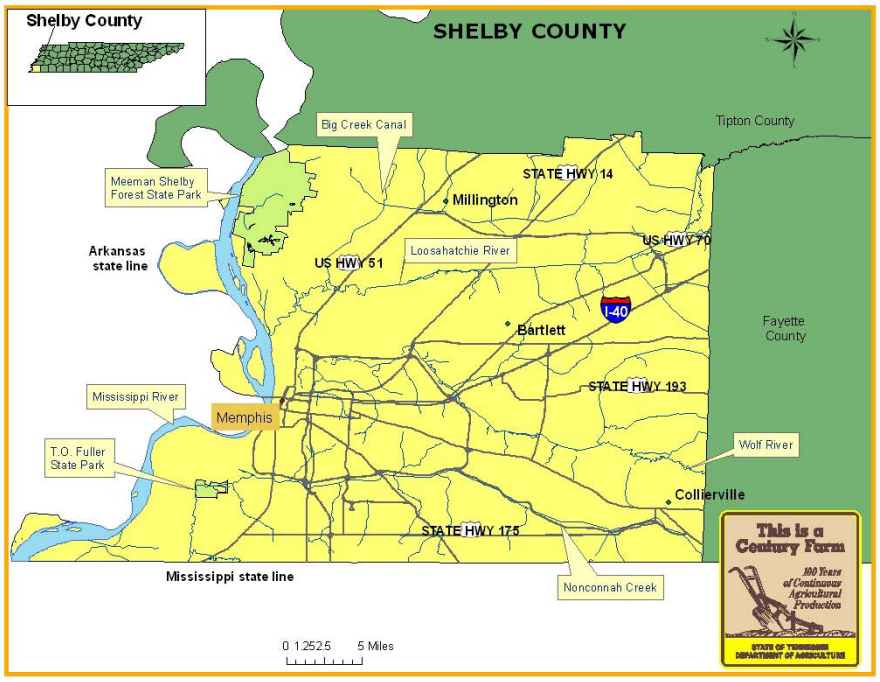
Memphis scored one for the home team when it was recently announced that device coating company Surface Dynamics will be granted a $5 million tax freeze on a facility in Bartlett that will employ 41 people.

The 14,500-square-foot leased facility will have $200,000 of improvements made when the lease is signed.

Surface Dynamics plans to service Memphis' Smith & Nephew, Wright Medical, and Medtronic, by applying a plasma spray to hip, spine and other orthopedic devices made by the companies.

"We chose the Memphis area because of the concentration of medical device companies and its proximity to customers in other geographies," said Surface Dynamics Managing Director Roy Smith in a January 26 article in the Memphis *Commercial Appeal.*

The northeast corner of Shelby County, (Memphis) has 26 different biotechnology, or "life sciences" companies, according to Clay Banks, director of economic development at the Bartlett Area Chamber of Commerce. He told the Appeal that these businesses run the gamut from medical-device makers to pharmaceutical distributors.



Map of Shelby County / tncenturyfarms.org

Surface Dynamics is owned by a small group of Italian investors, called Centara Srl, according to its economic development application. That group owns four companies all specializing in coating medical devices, airplane parts and power generators.

—*WE (January 28, 2010)*

FDA Sinks Disc Dynamics

Minnesota-based Disc Dynamics is in the process of shutting down its business. The rumors of the company's demise were confirmed to OTW by Dave Stassen, founding managing director of Split Rock Partners, the venture capital firm that corralled $65 million in private equity funds since 2000 for the spine company.

Stassen told OTW on January 28 that the FDA's refusal to allow the company to proceed with its IDE (Investigational Device Exemption) and continued request for more and more information and data finally "bled the company dry."

Stassen said this was the third or fourth company in their portfolio that has had to cease operations because of their inability to get through the FDA. Investors have dropped $300 to $400 million "down the hole" because of the FDA.

"It's a travesty that American patients won't be able to get access to this technology," added Stassen. "Patients with the device are getting outstanding results in Europe."

company news

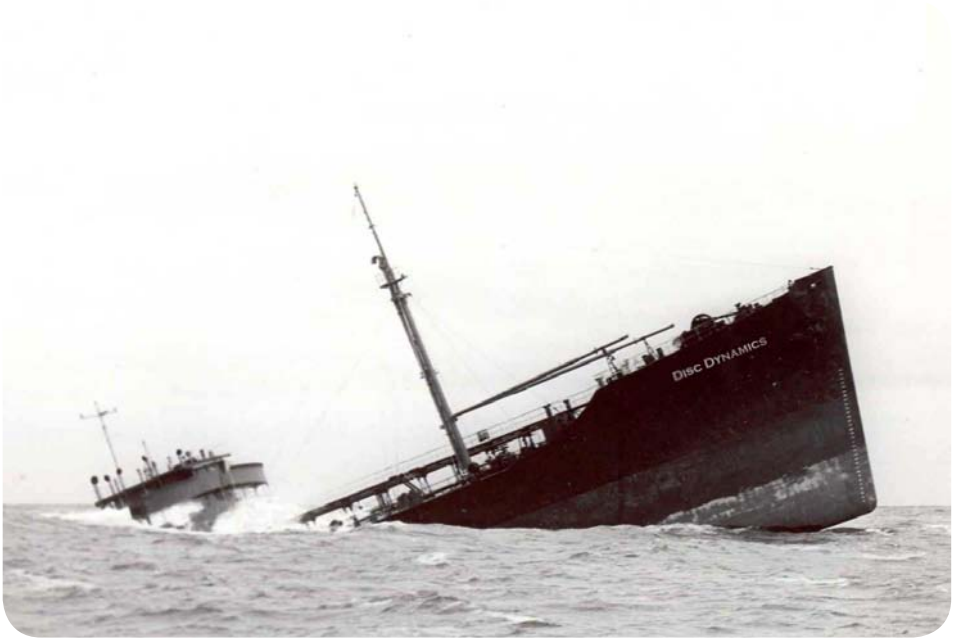


Image Source: RRY Publications

While Stassen blames inexperienced FDA staff for the delays, he acknowledged that the company shares some of the responsibility for early efforts with the regulatory agency that could have been handled better by the company.

The company had developed the Dascor Disc Arthroplasty System, a catheter-based, minimally invasive nucleus replacement technology for the treatment of degenerated lumbar discs.

Stassen said the company will be closing down the business throughout February and pay off vendors. He did not expect any type of bankruptcy proceedings.

—WE (January 28, 2010)

Zimmer 4Q09: "Impaired Goodwill"

A 7.5% increase in sales for the fourth quarter, almost lifted Zimmer Holdings' full-year sales growth into the black...almost.

Full-year sales of $4.1 billion declined 0.6% from the previous year.

Disappointing the Street

Dave Dvorak, Zimmer's President and CEO, had to fend off Wall Street analysts questions on January 28 about not quite meeting expectations for knees and hips revenues. Knees rose 10% for the quarter, while hips rose only 6%. He also had to explain a 12% decline in spine sales and a$75 million charge due to the "impairment of goodwill" when the FDA orthopedic panel turned down recommending approval of their Dynesys spine system in November 2009.

"Expectations were high going into this quarter," said J.P. Morgan analyst Mike Weinstein. "These results put Zimmer below market in hips and in line with the market in knees."

Dvorak acknowledged the slower-than-expected hip and knee sales, but said sales showed consistent sequential improvement each quarter of the year. He said the company has had some product gaps in hips.

company news

Spine: "Stay the Course"

"We're starting off in the hole," for spine said Dvorak. He said the company will make progress in spine and will end 2010 at market rate growth. He attributed the decline in spine sales to the Dynasys failure at the FDA panel in November. His optimism for the spine business was due to a broad portfolio and a broader distribution system. "We will stay the course," vowed Dvorak.

Dvorak: Objectives Accomplished

In a prepared statement, Dvorak said, "A solid performance in the fourth quarter enabled us to accomplish our major objectives for the year. We once again recorded year-over-year sales growth for the quarter in all three of our geographic reporting segments, driven by a 5.5% constant currency increase in our industry-leading knee replacement business. The continued improvement in our Reconstructive sales performance, combined with recent new product clearances, forms a foundation for sustained sales growth and leveraged earnings in 2010."

Fourth quarter and year end results are as follows:

—WE (January 29, 2010)

Zimmer Headquarters

Zimmer	4Q09s		2009	
	Sales ($ in Millions)	% Change	Sales ($ in Millions)	% Change
Net Sales	$1,100	up 7.5%	$4,100	down 0.6%
Reconstructive	$845	up 9%	$3,125	down 1%
Hips	$333	up 6%	$1,228	down 4%
Knees	$476	up 10%	$1,761	flat
Spine	$63	down 12%	$253	up 10%
Extremities	$36	up 19%	$136	up 12%
Trauma	$63	up 11%	$235	up 6%

Source: Zimmer Holdings

company news

Three Surgical Firsts for Integra

January has been a month of firsts for Integra LifeSciences Holdings Corporation. The company is beginning to move new spinal fusion devices to the market, and spine specialists are just beginning to use them in surgery. These first operations went smoothly, and more surgeons may soon look to these Integra devices for minimally invasive options during spinal fusions.

Paramount Pedicle Screw System

Earlier this month, on January 11, the company announced that Dr. Andrew Parkinson, of Orthopedic Associates of Oklahoma City, Oklahoma, performed the first operation to utilize Integra's Paramount Pedicle Screw System. The patient had degenerative disc disease in the L5-S1 disc space. After first placing an anterior Polyetheretherketone (PEEK) device, Dr. Parkinson used the Paramount system to provide secondary posterior fixation. Many spine fusion techniques require invasive surgeries, but the Paramount system attempts to give surgeons more minimally invasive options to streamline the fusion procedure.

Integra LifeSciences / www.integra-ls.com

It didn't take long before another surgeon utilized the Paramount system in a slightly different kind of procedure. Earlier this week, on January 25, Integra announced that Dr. Ali Araghi of the Texas Back Institute in Phoenix, Arizona, performed the first two-level surgery with Paramount. Dr. Araghi certainly understands the inner workings of the Paramount system as he was one of the designers who worked on the device. His patient had previously suffered spinal decompression and underwent a fusion procedure, but needed a corrective operation, and Dr. Araghi used the Paramount system to support the spine from L2-L4.

In the recent press release, Dr. Araghi said, "This type of corrective procedure, combined with the minimally invasive nature of the Paramount system, allowed me to make much smaller incisions, reducing disruption of the tissue and musculature at the treated level. This is a significant benefit for the patient."

Coral Spinal System

Integra LifeSciences also offers another minimally invasive option for spinal care with the Coral Spinal System. Dr. Morteza Farr from Santa Cruz, California, is the surgeon designer behind the Coral system's set of minimally invasive percutaneous tubes which surgeons can use to place pedicle screws. On January 22, the company announced that Dr. Farr became the first surgeon to use the Coral system in a one-level procedure to correct a patient's degenerative disc disease.

Now that the surgeon designers behind these devices have successfully utilized their inventions, it's time to see whether or not the Paramount and Coral systems will catch on with other spine specialists as well.

—DK (January 29, 2010)

extremities

TAPC: Prosthetics for Haiti

Doing what they can in a horrific situation…The Amputee & Prosthetic Center (TAPC) in Houston, Texas, along with the charity Limbs of Love, is sending hundreds of prosthetic components

extremities

Prosthetic Components/The Amputee & Prosthetic Center

and supplies as well as volunteering its prosthetic professionals to fit limbs on Haitian amputees in the upcoming months.

The Haitian people have experienced an overwhelming number of crush injuries and fractures, which are oftentimes accompanied by open wounds. Lacking medical supplies and antibiotics, medical teams are forced to resort to 19th century medicine, leaving their patients with an unfortunate choice, namely, amputation or death.

Joe Sansone, CEO of the Amputee & Prosthetic Center and founder of Limbs of Love, told *OTW*, "The major challenge in coordinating this effort is to remain patient and resist the urge to rush over to Haiti when there is not yet a need for prosthetic care. At this point, in the early stages after amputation, there is not a lot we can do for those who have suffered the loss of a limb. We must wait for wounds to heal before we can offer assistance, and due to the traumatic nature of the injuries doctors are reporting, the healing process can take anywhere from three to six months."

He added, "Also in Haiti due to the traumatic nature of the injuries due to the earthquake many amputees are facing the ever present threat of secondary infection on their road to recovery. With absence of post-operative care due to the lack of room in overcrowded medical facilities, many patients are being discharged with no place to go, leaving them no choice but to live in unsanitary makeshift camps after being made homeless in the earthquake. In addition, they require frequent wound cleanings, bandage changes, antibiotics, and appropriate follow-up care in order to prevent infection, all of which are not readily available at this time."

Regarding the staff who will accompany the equipment, Sansone told *OTW,* "We will likely send our prosthetist Rebeca Guajardo—I will likely go as well and help coordinate prosthetic care with the medical teams currently in Haiti. We plan to provide as many limbs as possible to amputees in hopes of giving them a second chance. One group we are hoping to partner with is Healing Hands for Haiti, a group that has experience working in Haiti and has provided prosthetic devices to Haitians in the past."

When asked if there were anything else he would like the orthopedic community to know, Sansone commented *to OTW*, "What is most unfortunate about Haiti's situation is that due to the vast number of amputations being performed, a new generation of amputees is being created. And in Haiti, there is very little access to wheelchairs or crutches,

Packing Boxes/The Amputee & Prosthetic Center

extremities

giving these new amputees no source of mobility. In a country that had so much devastation prior to the earthquake, survival for amputees will be increasingly difficult, especially for those without prosthetics. We are in dire need of prosthetic components, mainly stump shrinkers, to give Haitian amputees the gift of mobility that they so desperately need. We expect to begin fabricating limbs in early May, once the healing process is complete. For information on donating to help this cause, whether monetary or bracing/prosthetic components go to www.limbsoflove.com for more information."

—EH (January 28, 2010)

SBi: First Surgeries in Malaysia

Pointing in the righting direction…the innovators at Small Bone Innovations, Inc. (SBi) have announced the first surgeries in Malaysia using the company's SR PIP (Surface Replacement Proximal Inter Phalangeal) replacement finger joints to reduce pain, restore form, function and motion. This followed the recently announced formation of SBi Asia Pacific Sdn. Bhd., a joint venture with Khazanah Nasional Berhad and Malaysian Technology Development Corporation Sdn. Bhd. that is based in Kuala Lumpur, Malaysia.

Ranjit Singh Gill, MBBS, FRCS, AM, a hand and microsurgery consultant at both the Pantai Medical Centre and Kuala Lumpur Sports Medicine Centre, completed the finger joint replacements at each facility using SBi's SR PIP joint replacement devices on patients presenting with finger arthritis. The implants are designed to replace the anatomic joint surfaces while preserving the maximum amount of bone and minimizing soft tissue disruption. There are two pieces: one piece has two components, a cobalt chrome stem and an attached ultra-high molecular weight polyethylene (UHMWPE) component, and the other piece is a titanium alloy stem. Both stems have a textured surface that facilitates osseointegration.

SR PIP/SBi

Dr. Gill said in the news release: "SBi's formation of a joint venture in Malaysia is something of a breakthrough opportunity for us, because it not only brings SBi's technologies to the Asia Pacific region, including the SR PIP implants, but also demonstrates SBi's commitment to develop implants specifically designed for Asian anatomies. Obviously, this is good news for thousands of patients and future arthritis sufferers."

Anthony G. Viscogliosi, Chairman and CEO of SBi, added: "These first surgeries mark an important milestone for SBi, and the doctors and their patients as we embark on our objective to establish the company as the global first mover in the Asia Pacific region to provide a portfolio of arthroplasty and trauma reconstruction solutions for the small bone and joint anatomies."

Viscogliosi told *OTW* that both patients were reportedly doing well. As to next steps in Malaysia, he added: "Our shorter-term goals are to build a first class, nationwide distribution network and to assemble a surgeon advisory board of leading opinion leaders."

—EH (January 29, 2010)

large joints

Meniscus: Computer Trumps Humans

If your knee goes out, maybe you should let your laptop have a look at it. Scientists from Ohio State University have found that measuring the meniscus with a computer program is much faster than having a human being do it…and the machine performs just as reliably.

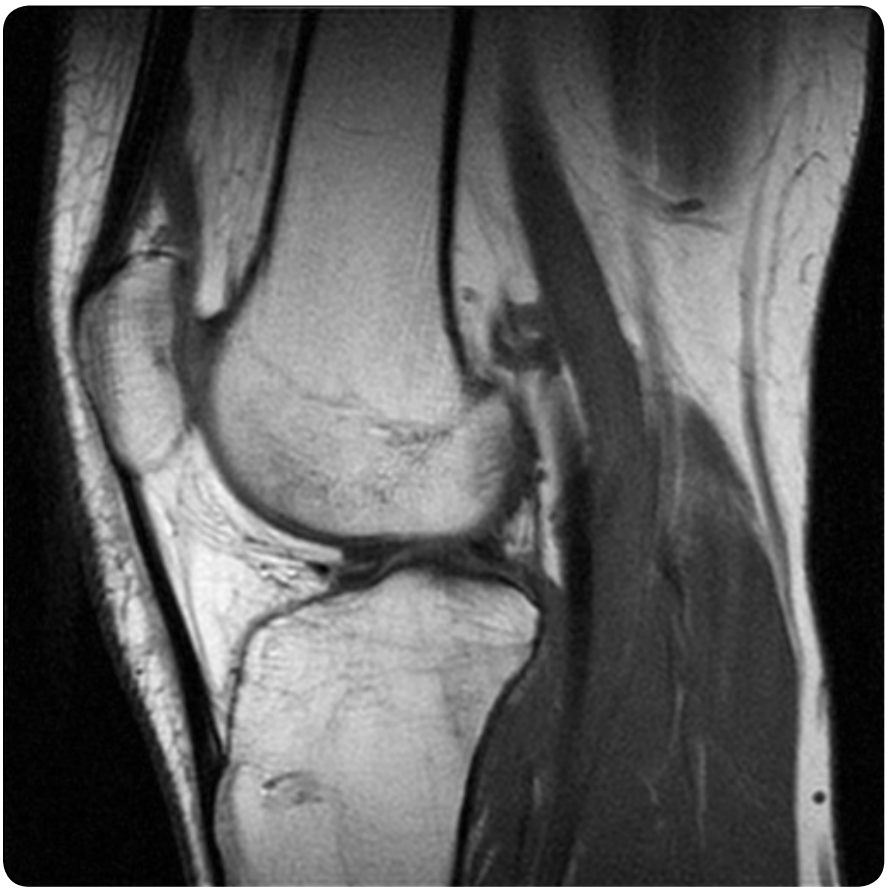
large joints

The researchers indicate that having more precise information about wear and tear on the meniscus could lead to its use as a biomarker in predicting who is at risk for developing osteoarthritis (OA). The automated measurements were either as reliable or more reliable than human measurements of mild to moderate cases of knee degeneration. More work is needed to make the program equally strong in measuring severely damaged knees, researchers say. The score? Humans: 7-20 minutes; computer program: 2-4 minutes.

"Our ambitious goal is to change the way radiology is practiced," said Metin Gurcan, senior author of the work, in the news release. An Assistant Professor of Biomedical Informatics at Ohio State University, Dr. Gurcan added, "Right now, radiologists don't have the tools to make more than crude measurements of most images. So one thing we are doing is providing those tools."

With data from 4,796 study participants, researchers from Ohio State Medical Center and three other U.S. clinical centers used 24 randomly selected images—10 from patients with no symptoms, and 14 from patients diagnosed with OA.

"We set up a process of elimination for consideration. It says bright pixels are not the meniscus. And we know some areas in the images are bone, ligaments and cartilage, so the algorithms won't let those areas be considered the meniscus," said Mark Swanson in the news release. Swanson is a medical student at Ohio State and lead author of the paper.



MRI of Knee / Wikimedia Commons

The program reads each of up to two dozen slices to designate and segment the three-dimensional structure of the meniscus. The program also compares the previous slice to the current slice, re-evaluates and checks its work. A person scrolls through images, finds the first slice with an image of the meniscus, and places a point within that area of the image. A second point must be placed on the meniscus in the last slice in which that part of the knee anatomy appears.

"From there, the computer takes over," Swanson added. "It looks at that first point and starts growing around it." Once the segmentations are complete, clinicians are able to calculate the volume, thickness, intensity and any tears in the meniscus—all data that can be compared with calculations made with data from later images. If changes in the meniscus correlate with osteoarthritis symptoms, this part of the knee could become a target for prevention and treatment of the disorder.

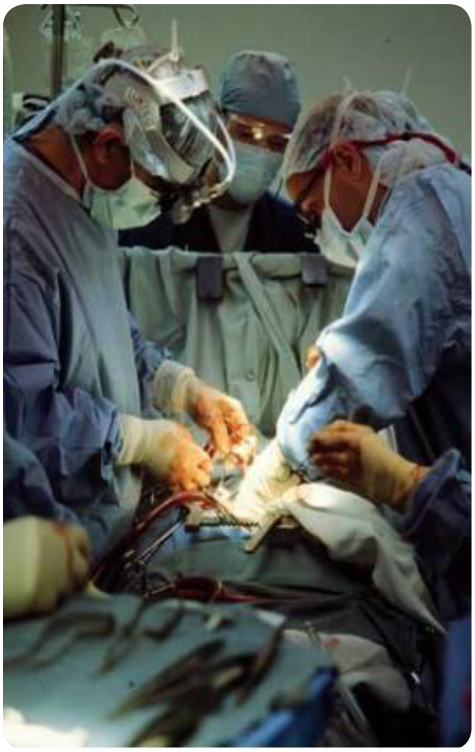
—EH (January 26, 2010)

large joints

Changes Needed to Ortho Training Programs

It's 2020…are there enough orthopedists to treat the multitudes who need hip or knee surgery? According to a study by researchers at Hospital for Special Surgery (HSS), this is just one issue facing the training programs of today. "One of the biggest factors challenging the education of orthopedic surgeons is the work-hour restrictions which have severely affected what residents are able to learn and do within the five years of training," said Laura Robbins, DSW, in the news release.

Dr. Robbins pointed out that patients may suffer as well. "The resident traditionally used to be the one person who knew the patient from the beginning of care to the end of care, because they were here during the day and during the night on call," Dr. Robbins said in the news release.



Wikimedia Commons

Dr. Robbins told *OTW*, "HSS has hired physician assistants and hospitalists in order to ensure that residents could adhere to work hours while ensuring that the patients receive the care they need. We are also moving toward more online learning for didactic curriculum and updates on hospital requirements to allow residents the ability to access learning at times when they are off duty from the hospital."

Also identified as significant issues were generational and gender differences. "The residents of today are a very different generation than the current senior surgeons. They approach training very differently in that they have multiple priorities, becoming good surgeons while they juggle family and extra activities as a whole. The trainees and the surgeons of the past were more focused on their careers first," Dr. Robbins stated in the news release. Residents today also want to learn via electronic technology, which is vastly different from the way older surgeons learned. Dr. Robbins reported that programs are lagging behind in providing educational modalities via electronic technology. On a gender front, more women are going into orthopedic surgery and there are more challenges like maternity leave affecting programs.

Regarding the need for more residents, Dr. Robbins commented to *OTW*, "The number of residents for training program has been capped for over 20 years, and we are not hopeful they will increase in specialty areas in the near future. There is a greater chance for increased slots for primary medicine and preventive medicine given the national push on prevention and public health. While that is needed and we support that, there is the overwhelming need for more spots in orthopaedics given the growing number of baby boomers who will need and demand knee or hip surgery. The AAOS has said that there will not be enough orthopaedic surgeons to treat these seniors, and return them to mobility and quality of life in the near future."

—EH (January 25, 2010)

Autoimmune Diseases and Environment

The "dance" of arthritis and other autoimmune diseases is an interaction between what we encounter in our environment and what we inherit in our genes. Professor Michael Ehrenfeld, a rheumatologist from Tel Aviv University's Sackler School of Medicine, has just published a report on spondylo-arthropathies, a group of common inflammatory rheumatic disorders, appear to be triggered by environmental factors.

"The onset of autoimmune diseases is a mixture of genetics, which you can't change, and environmental

large joints

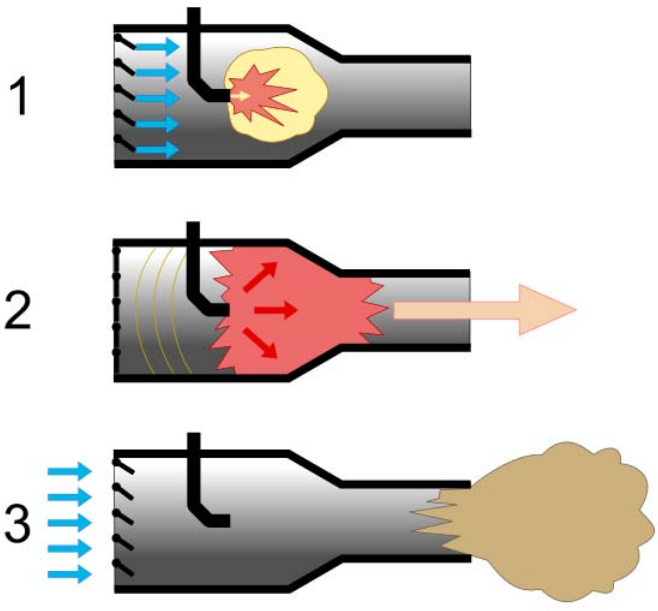
factors, which in some cases you can," said Professor Ehrenfeld in the news release. While he cites pollution as a trigger in many autoimmune disorders, he adds, "there are some environmental factors harder to avoid. For example, reactive arthritis is caused by a severe gastro-intestinal, urinary or sexual infection in some people."

While we still cannot tell which genes encode this disease and make some people more susceptible to autoimmune diseases, there are some basic behaviors that may keep these disorders at bay. One root cause of arthritis is extreme stress, said Professor Ehrenfeld in the news release.

"You won't know if taking the pill or getting a certain virus will trigger arthritis, because we don't yet know the genes that encode the various autoimmune diseases," he added. "Obviously those people whose family members share a history of rheumatoid arthritis, or other autoimmune diseases including thyroid problems, should be more vigilant, because their chances are higher."

What's swirling around in the air is also an issue for people genetically predisposed to an autoimmune disease. Second-hand smoke, food chemicals or chemicals in the air, jet fuel fumes, UV exposure and other forms of environmental pollution are amongst the triggers considered to provoke the onset of autoimmune diseases.

Industrial regions, particularly in Northern Europe and North America, still exhibit the highest rates of most autoimmune diseases. But on a much more local scale, Professor Ehrenfeld also singles out hairspray as well as lipstick as known occasional triggers.



Pulse Jet Engine/Wikimedia Commons

Commenting to *OTW,* Professor Ehrenfeld stated, "Hairspray and lipstick are among the environmental triggers which were occasionally described to be related with lupus (not arthritis). The exact ingredient to be related is unknown."

"Most people think arthritis has to do with old age," said Professor Ehrenfeld in the news release. "This is false. There is only one major type of arthritis in older people: osteoarthritis, which is brought on by degenerative changes in the body. What you see in older adults is usually a non-inflammatory and non-autoimmune type of arthritis. Most of the other kinds of arthritis we see in the clinic, the debilitating and inflammatory types, usually occur in young women between the ages of 20 and 40. We hope that our research will lessen the occurrence and onset of these painful disorders."

Professor Ehrenfeld told *OTW*, "At the moment I am not planning to continue with this topic. It all started with my work on EB virus and Sjogren's disease and the review I am publishing now on the environmental triggers of spondyloarthritis."

—EH (January 27, 2010)

The Picture of Success: Dr. Paul Saluan

By Elizabeth Hofheinz, M.Ed., M.P.H.

How many American pediatric orthopedists are also sports medicine experts? Less than 20, says Dr. Paul Saluan, a member of this select group, and an orthopedic surgeon at Cleveland Clinic.

A native of Cleveland, Paul Saluan was the youngest of seven children. "My father emigrated from Lebanon and unfortunately was not able to get much formal education. My mother was a stay at home mom who dealt with the rigors of raising seven children while my father went to work. Being the child of immigrants you don't take for granted the freedoms that are available in the U.S. My dad always said, 'You are lucky to be here. Remember that we worked hard to get to this country.'"

Also guiding the early life of Paul Saluan were those from a rigorous intellectual and moral background. "I had a Jesuit education all throughout lower school and high school. Not only was the education unrivaled, but their moral credo stands apart: become a man for others. This impressed upon me the importance of taking care of people, of giving one's time and going beyond the self for others."

But it wasn't a "father" who guided the young Paul Saluan towards medicine…it was an uncle. "My father's brother was a general surgeon. By watching him work, I developed a fascination with the workings of the human heart—in essence, a real thirst for knowledge regarding this perfect machine that runs for our entire lives."

Finding his Niche in Medicine

He decided to tackle orthopedic surgery in part because of his experience on the football field. "I spent my undergraduate years at John Carroll University in Cleveland, where I majored in biology and was an outside linebacker for four years. Just after graduating college, I met Deborah, the love of my life. She had just graduated from Notre Dame College with a degree in business management and was a personal trainer—a perfect fit for me given my love of sports. When I got to Case Western Medical School, it was an easy decision to go into orthopedics. It fit my love of sports, as well as my tendency to be concrete and to enjoy fixing problems."

After Dr. Saluan realized that orthopedics was a good fit for him, he entered a residency at Cleveland Clinic. "The intern year was very difficult because my dad became ill and spent the last three months of his life at Cleveland Clinic. Deborah, my family, friends and colleagues at Cleveland Clinic were all amazingly supportive throughout the ordeal."

Glad to have such engrossing work during a difficult time, Dr. Saluan plunged into his education.

> *"The program was unusual in that we had mini internships with each doctor, which involved lots of one on one time in the clinic, office and OR. My interest in pediatric orthopedic surgery developed in my third year and was enhanced by my time with Dr. Alan Gurd, the head of pediatric orthopedics, as well as Drs. Jack Andrish, and Tom Kuivila. I could see that I would like this field because you A) identify the problem, B) Treat the problem and C) the patient moves on and usually does quite well. Two more pediatric rotations and a realization that Cleveland Clinic attracts interesting,*

complex cases solidified my decision to become a pediatric orthopedist."

Then a visiting professor with a magnetic personality pulled Dr. Saluan in a westerly direction. "Dr. Bob Eilert, the fellowship director at Denver Children's Hospital, had come to Cleveland Clinic in my fourth year. His easygoing style and charisma really captured people. One of my more senior colleagues in residency was just finishing his fellowship there, and highly recommended it. He was right: it ended up as my best year of training. Denver being a regional hub, we saw lots of complex children's issues, including pediatric sports injuries."

Building Practices of his Own

Growing up in a large family, Dr. Saluan has always appreciated hearth and home…thus it was back to Ohio for him. "My wife and I enjoyed Denver, but our families are from the Midwest, and we thought it would be too difficult to live there and maintain good relationships from a distance. So in 1999 I went into practice in Akron at Crystal Clinic, a group with more than 20 orthopedic surgeons. It was a bit nerve wracking to be out on my own with no safety net. Fortunately, my residency and fellowship had prepared me well."

"While in Akron I shared an office with one of the lead surgeons, Dr. Whit Ewing, who was nearing the end of his career. He had a thriving sports medicine practice, and began sending me a lot of his patients. Working with Whit was almost like a mini fellowship; if I wasn't busy, I would go into his OR, watch him operate, and pick his brain."

Three years later Dr. Saluan found himself working with those who had undergone the same rigorous residency program as he had. "We moved to Cleveland in 2002, and I joined a private group, Southwest Orthopedics Inc., which claimed three former Cleveland Clinic residents. For five years I worked there, as well as the Metro Health Medical Center, where I worked alongside Dr. Dan Cooperman, an insightful pediatric orthopedist. He is a very intelligent, giving person who taught me to respect the natural history of musculoskeletal disorders in children."

Then Cleveland Clinic sent out a search party for Dr. Saluan. "Nearly three years ago a group of surgeons, including Dr. Joe Iannotti, the Chair of orthopedics at the time, recruited me back to Cleveland Clinic. They were in need of someone to further develop their pediatric and adolescent sports program within the sports health department."

Too smart to reinvent the wheel, Dr. Saluan crafted his vision for a pediatric and adolescent sports medicine program in part from the brilliant work of another physician. "One of our star orthopedists, Dr. John Bergfeld, had created an exceptional program for Cleveland Clinic sports patients, so I applied what I had learned about the program while in residency with the most successful Children's Hospital sports programs across the nation. We followed a tried and true approach to program building, i.e., first developing clinical expertise, then launching programmatic research specifically focused on the pediatric and adolescent athlete."

Developing Research Tools

When the opportunity arose to apply for a grant from the Orthopaedic Research and Education Foundation and the Pediatric Orthopaedic Society of North America (POSNA), Dr. Saluan and colleagues leapt at the chance. "We were awarded the funding, which has allowed us to develop a musculoskeletal questionnaire that will be used with 11-18 year olds who have pain or injury in their extremities. It will provide practical, real time information that will be used in the clinic; then it can be uploaded and made part of the patient record."

Elaborating on the utility of this tool, Dr. Saluan says, "Most outcomes instruments are not widespread and none have the clinical relevance that

we are looking to create. And most of them are proxy reported, meaning that parents provide the information, something that decreases the reliability of the answers. If you have a 17-year-old with a dislocated shoulder…you would ask him certain questions such as, what type of situation led to this, how often does it happen, etc. Some of these would be included in a normal exam anyway, so our instrument provides information for research and clinical purposes. It's not a research tool that gets in the way of clinical care—it helps facilitate care *and* helps you meet requirements for billing because the documentation is improved."

He is also hoping that his clinical research will change things in the OR. "I am studying the biomechanics of different ACL reconstructions in the skeletally immature (those with open growth plates). A reconstruction may create problems with the growth plates; with different types of reconstructions, the grafts end up in slightly different positions. My theory is that these reconstructions have different biomechanical effects on the knee…you just don't have as much rotational control with certain types of reconstructions. If I can prove my theory, the next step is to show the clinical relevance of the difference in biomechanics, something that could change the way we approach kids surgically."

"Specifically," says Dr. Saluan,

> ***"It may change the timing of surgery. Prior to several years ago we used to show benign neglect with regard to when the child had surgery. When we do an ACL reconstruction, we drill across the growth plates in order to put the ACL in right, which unfortunately can lead to growth disturbances. In the past we would brace the patients, send them to physical therapy, advise them to modify their activities, and wait until the growth plates closed down. However, in the last five years we have realized that waiting was not as benign as once thought."***

Sitting astride two specialties, Dr. Saluan plans to set the stage for others to share his vision. "There is such a paucity of people who specialize in both pediatric orthopaedic surgery and sports medicine. I have it as part of my five year plan to develop a pediatric and adolescent sports medicine fellowship program here at Cleveland Clinic. The clinical volume is here, and there are a substantial number of high school, college and professional teams in Northeastern Ohio."

Given their activity level, Dr. Saluan's family is certainly blessed to have a peds/sports medicine specialist around. "My wife and I have three children, a 14 year old daughter, an 11-year-old son and a 4-year-old daughter. Our elder daughter plays soccer and volleyball, our son plays baseball and soccer, and they are all in a ski club. My hobbies are largely work, work, work…and chasing after the kids. I do some fitness training, yard work and fixing up around the house, and I do get to the slopes with my wife and the kids."

Dr. Paul Saluan…chasing—and finding—excellence in many areas.

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