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Dr. William Levine Appointed Orthopedic Surgeon-in-Chief

Renowned clinician, scholar, and researcher William N. Levine, MD, has been named Orthopedic Surgeon-in-Chief of NewYork-Presbyterian/Columbia University Medical Center and Chair of the Department of Orthopedic Surgery at Columbia University College of Physicians and Surgeons, effective July 1. In announcing Dr. Levine's appointment, Steven J. Corwin, MD, CEO of NewYork-Presbyterian Hospital, said, "We are pleased to welcome Dr. Levine to his new leadership role. His extensive background in orthopedic surgery and sports medicine will be pivotal in our continued provision of innovative, outstanding, and patient-centered care."



Dr. William N. Levine

As a former tennis professional and starting goalie for Stanford University's hockey team, Dr. Levine brings a lifelong passion for sports medicine to his patients.

Dr. Levine began his tenure with NewYork-Presbyterian/Columbia in 1998 when he was named Director of Sports Medicine. Throughout his notable career, he has served in numerous leadership roles, including most recently as Vice Chair for Education for the Department of Orthopedic Surgery, Director of its residency and fellowship programs, Chief of the Shoulder Service, and Co-director of the Center for Shoulder, Elbow and Sports Medicine.

Dr. Levine has long been committed to medical education and throughout his career he has served as a mentor to students, residents, fellows, and colleagues. He became residency director in 2002, and in 2006 he was awarded the Charles S. Neer, MD Teacher of the Year Award for his dedication to resident education. Dr. Levine is also a past recipient of the prestigious American Shoulder and Elbow Surgeons Traveling Fellowship.

A distinguished researcher, under his tutelage the Center for Shoulder, Elbow and Sports Medicine has developed a major research program that continues to grow.

A native of Fargo, North Dakota, Dr. Levine received a BA in Human Biology from Stanford University in 1986 and his medical degree from Case Western Reserve School of Medicine in Cleveland. He was a resident and chief resident in orthopedic surgery at Tufts Medical Center and held fellowships at Columbia-Presbyterian Medical Center and the

University of Maryland Sports Medicine Department. While in Maryland, he served as a Team Physician for the Baltimore Ravens and the University of Maryland.

As a former tennis professional and starting goalie for Stanford University's hockey team, Dr. Levine brings a lifelong passion for sports medicine to his patients. He is Columbia University's Head Team Physician, responsible for providing care for 31 Columbia intercollegiate athletic teams. He has been named a Top Doctor in Sports Medicine by Castle Connolly and *New York* magazine, as well as one of the top 25 shoulder surgeons in the United States by *Orthopedics This Week*.

Dr. Levine is a member of the Executive Committee of the American Orthopedic Association. He serves on the Board of Directors of the American Board of Orthopedic Surgery, and as Deputy Editor of the *Journal of the American Academy of Orthopedic Surgeons*. Dr. Levine has made substantial contributions to research, having published more than 140 peer-reviewed articles, written over 50 book chapters, edited 11 textbooks, and given over 200 scientific presentations in the United States and abroad.

Dr. Levine succeeds Louis U. Bigliani, MD, who is retiring as Chair after leading the Department of Orthopedic Surgery for the past 16 years, during which time the Department doubled in size and significantly expanded both its research and clinical programs.



Reconsidering the Standard for X-ray Timing of Distal Radius Fractures

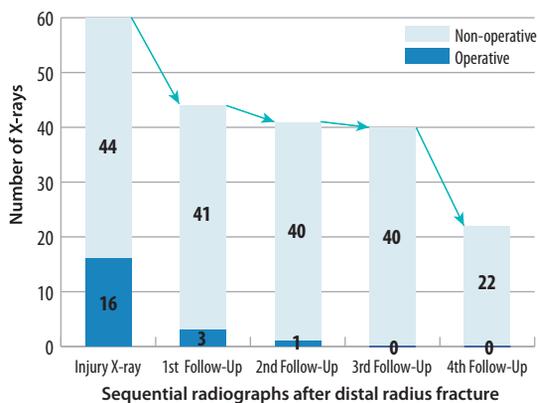
Distal radius fractures are extremely common injuries, representing more than 20 percent of all fractures in children and adults. Current treatment guidelines include a standard recommendation that patients with a wrist fracture treated non-operatively have weekly X-rays for three weeks and then again at six weeks so the surgeon can assess the fracture for slippage or any shifting over that time period and whether remanipulation or surgery is necessary.

When James D. Lin, MD, a first-year orthopedic resident in the Department of Orthopedic Surgery at NewYork-Presbyterian/Columbia University Medical Center, was working as a research fellow in the Department’s Trauma Training Center research unit, he could not find evidence or documentation to back this up.

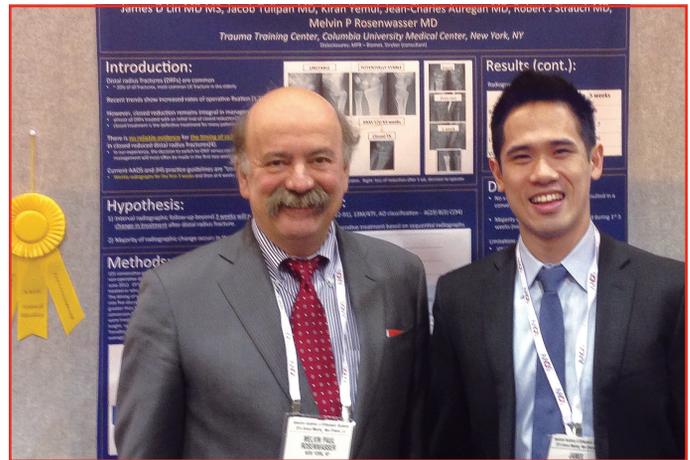
Working with Melvin P. Rosenwasser, MD, Director of the Trauma Training Center, and Robert J. Strauch, MD, a specialist in hand, wrist, and elbow problems at NewYork-Presbyterian/Columbia, Dr. Lin took advantage of the large-scale clinical outcomes database, including an extensive database on distal radius fractures, housed in the Center.

“The database is a gold mine of information,” says Dr. Rosenwasser, who is also the Robert E. Carroll Chair in Surgery of the Hand at Columbia University College of Physicians and Surgeons, Director of the Hand Fellowship, and Chief of Hand, Microsurgery, and Orthopedic Trauma at Columbia University Medical Center. Dr. Rosenwasser established the clinical outcomes database two decades ago. “We felt it would be an invaluable resource for investigating the validity of the currently accepted timing for radiographic follow-up of these fractures. There hasn’t been any suitable research into how long it takes for this type of fracture to become stable. What we’ve been taught as orthopedic surgeons is that after the initial injury and after the initial manipulation of the fracture, we have to keep taking X-rays to check for issues with healing as time passes and to determine if it is in an acceptable position so that the patient will have a good outcome.”

Radiographic Time Points and Conversion to Operative Treatment



And so the research team, led by Dr. Lin and including Drs. Rosenwasser and Strauch, utilized the Trauma Training Center’s database on distal radius fractures in adults to evaluate this particular guideline. Their in-depth research led to a poster presentation – *Radiograph Follow-Up During Closed Treatment of Distal Radius Fractures: How Many Weeks Are Necessary?* – at the 2014 American Academy of Orthopaedic Surgeons Annual Meeting and was selected



Dr. Melvin P. Rosenwasser and Dr. James D. Lin

as the best poster in the Hand and Wrist Section of the AAOS.

“The purpose of this study was to evaluate the utility of sequential follow-up radiographs during closed treatment of distal radius fractures,” explains Dr. Lin, who served as lead author. “Our hypothesis was that interval radiographic follow-up beyond three weeks will not result in change in treatment after distal radius fracture. Our secondary hypothesis was that the majority of radiographic changes occurred in the first three weeks.”

“For the fractures that are in good position, we were interested in looking at the time period during which they can fall out of position in a cast,” says Dr. Strauch. The researchers identified 100 consecutive patients from the prospective database of operative and non-operative distal radius fractures treated at NewYork-Presbyterian/Columbia between May 2011 and June 2012. Of these patients, 60 patients were identified who either were operatively treated or who had regular radiographic follow-up during a period of closed treatment. The timing of each patient’s radiographs was categorized into five discrete time points: time of injury, 0-10 days, 11-21 days, 22-56 days, and greater than 56 days. Each radiographic time point was correlated with clinical conversion from non-operative to operative treatment. And in the subset of patients who were treated non-operatively, all sequential radiographs were measured for radial height, radial inclination, volar tilt, and ulnar variance.

The findings were quite significant, demonstrating interval radiographic follow-up for the first three weeks during closed treatment of distal radius fractures appears to be sufficient to capture most patients requiring surgery. “We found that X-rays taken beyond three weeks post-injury did not change our treatment strategy from non-operative to operative,” says Dr. Strauch.

“Physicians – especially in emergency departments – treat these fractures every day, often multiple times daily,” says Dr. Lin. “So this new research has immediate day-to-day applicability.”

Adds Dr. Rosenwasser, “There are also economic implications for health care if several sets of X-rays could be eliminated in the course of treatment with no detriment to patient outcome.”

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ACL Injuries: Reducing the Physical and Financial Cost in Young Athletes

Anterior cruciate ligament (ACL) injuries among young athletes have been increasing dramatically with the significant growth of youth participation in sports over the last decade. “In fact, because of the number of these injuries, we now consider this an epidemic,” says Christopher S. Ahmad, MD, Chief of Adolescent and Pediatric Sports Medicine at NewYork-Presbyterian/Columbia University Medical Center and Head Team Physician for the New York Yankees.

According to a new study presented by Dr. Ahmad and his colleagues at the 2014 American Academy of Orthopaedic Surgeons Annual Meeting, training programs to improve neuromuscular control can radically lower the incidence of ACL injuries in young athletes and reduce the high financial cost of repairing these injuries. “This research is groundbreaking in many ways,” says Dr. Ahmad, “and deserves the attention of anybody involved in sports – not just medical care providers, but also parents and coaches.”

Although reconstruction surgery is necessary once the ACL is torn, it is not always an absolute solution for these young patients because some of them can never return to their sport following surgery, or they end up enduring discomfort and weakness, which can take both a physical and psychological toll on them. And then there is the other critically important reality to an ACL injury: its costly price tag, which can average \$15,000 per patient for the reconstructive surgery and rehabilitation. “ACL injuries cost our country over a billion dollars every year,” says Dr. Ahmad.

Therefore, it makes sense to prevent these injuries in the first place. With this in mind, researchers have been conducting biomechanical studies to develop exercises – often called “prevention and enhancement of performance programs” – that increase strength and agility in order to decrease the incidence of ACL injuries. These programs are designed to correct muscle imbalance and optimize muscle reaction times so that the athlete’s muscles fire more quickly and at the right time. According to Dr. Ahmad, “There are specific landing and lunging exercises that can be done. Some of the exercises are not just around the knee, but are focused around the hip and the core muscles because if you strengthen these central body muscles, the knee is in a less risky position for an ACL injury.”

Researchers have also looked at the benefits of screening tools designed to predict those athletes who are higher risk for ACL injury, evaluating physical activity that demonstrates muscle weakness and muscle imbalance. Until now, however, studies have not analyzed and evaluated the cost-effectiveness, as well as the health impact of prevention programs and the role of screening. “We have an obligation and a responsibility as physicians to not just look at outcomes but to look at how they affect health care costs,” says Dr. Ahmad. To achieve this, Dr. Ahmad and his research team, in collaboration with Columbia’s Department of Public Health, designed a sophisticated computer-based, decision-analytic model. It is the first study of its kind to focus on the huge burden of ACL injuries on the cost of health care.

The model evaluated three strategies for a population of young athletes participating in organized sports:

- 1) no training or screening
- 2) universal neuromuscular training
- 3) universal screening, with neuromuscular training for identified high risk athletes only



Dr. Christopher S. Ahmad

The information on risk of injury, risk reduction from training, and sensitivity and specificity of screening were based on published data from clinical trials. Costs of training and screening programs were estimated based on existing literature.

“We put in data such as the cost of an ACL reconstruction, the incidence of ACL injuries occurring in our young athletes, the amount we know the programs will cost, and we put in what we believe is the reduction in the incidence of ACL injuries when you implement a prevention program,” notes Dr. Ahmad. “The results from this analytical model clearly indicate that the most effective strategy for reducing costs and morbidity from ACL injuries is to offer neuromuscular training programs to everyone, not just those who were screened as high risk for ACL injuries, since the prevention programs designed to reduce ACL injuries are so inexpensive.”

For example, implementing an ACL injury prevention program for a team may simply involve improving its warm-up routine. On average, the study shows that implementation of a universal prevention program would save \$275 per player per season, and would reduce the incidence of ACL injury by 63 percent – from 0.03 to 0.011 per player per season.

According to Dr. Ahmad, the next logical step is to improve existing training protocols and implement a universal policy requiring ACL prevention programs for school athletes. One way to accomplish this is to determine if these prevention programs do more than reduce ACL injuries. “Parents, coaches, and athletes want to improve performance,” says Dr. Ahmad, “so we’re evaluating whether these programs have the added value of improving athletic performance. I think that’s how these programs will achieve widespread acceptance and compliance.”

Reference Article

Swart E, Redler L, Fabricant PD, Mandelbaum BR, Ahmad CS, Wang YC. Prevention and screening programs for anterior cruciate ligament injuries in young athletes: a cost-effectiveness analysis. *The Journal of Bone & Joint Surgery (Am)*. 2014 May 7;96(9):705-11.

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