Study Uncovers Clues to Broken Bones

While snowboarding in Maine, a 29-year-old woman hit a mogul and fell, landing on top of her outstretched wrist. In pain, she went to a local clinic, where she was fitted with a wrist splint. But she continued to have tenderness and swelling, so she came to BIDMC for care. X-rays revealed a fracture of the distal radius (or wrist).

When a younger person falls and breaks a wrist in a sport like snowboarding or rollerblading, it may appear to be an accident that could happen to anyone due to the sheer impact. But surprisingly orthopaedic researchers at BIDMC have found that people who sustain these injuries in their 20s or 30s may have weaker bones and be predisposed to fractures later in life.

Since osteoporosis—the bone-thinning condition—is usually thought to affect older people, previous studies focused on that age group. Most research, in fact, has centered on postmenopausal women, who suffer broken bones more commonly than men.

But BIDMC researchers wondered if there were early signs of skeletal fragility. In this study of premenopausal women, investigators set out to find if something was different about the bones in women who have fractures at a younger age.

A collaborative effort between clinical and basic science faculty in the Department of Orthopaedics, the study compared women ages 18 to 45 with recent wrist fractures to people of similar ages without fractures. Researchers controlled for factors, such as body size, activity level, age of menarche (first period), and use of birth control pills. Using advanced, high-resolution CT scanning technology, they were able to examine the “microarchitecture” or inner structure of their tibia and wrist bones.

“We found there were indeed some differences in the bone’s structure,” says Tamara Rozental, MD, of the Division of Hand and Upper Extremity Surgery at BIDMC and lead author of the study published in the Journal of Bone & Joint Surgery. “In patients with fractures, the trabecula, or connective structures within the bone, were thinner and more spread apart.”

continued on page 4
Letter from the Chairman

Dear Colleagues and Patients:

You may have heard that BIDMC has entered into a joint venture with New England Baptist Hospital (NEBH) to create one of the nation’s top destinations for orthopaedics. This strategic partnership will capitalize on the complementary strengths of the two institutions and their respective medical staffs.

We look forward to sharing more information with you as this new relationship unfolds. In the meantime, we in the Orthopaedics Department will continue to provide our outstanding, high-quality patient care, our research, and teaching. The relationship may also further enhance our ability to advance medical knowledge through clinical and basic science research by combining each institution’s best practices and pooling resources.

In this issue of the newsletter, you will learn about our plans to provide more community-based care with the creation of our Sports Medicine and Rehabilitation Center at the new BID HealthCare-Chestnut Hill location. You’ll also learn about fragility fractures in the young, shared decision making between patients and physicians, and upcoming changes in the foot and ankle service.

As always, our commitment is to continue to provide patients with the highest quality care available, and we look forward to further enhancing patient care and improving access through our new alliance.

Sincerely,

Mark C. Gebhardt, MD
Chief, Department of Orthopaedics

DEPARTMENT OF ORTHOPAEDICS

<table>
<thead>
<tr>
<th>SPECIALTY</th>
<th>PHONE</th>
<th>EMAIL</th>
</tr>
</thead>
<tbody>
<tr>
<td>FOOT &amp; ANKLE</td>
<td>617-667-7671</td>
<td>orthofoot&amp;<a href="mailto:ankle@bidmc.harvard.edu">ankle@bidmc.harvard.edu</a></td>
</tr>
<tr>
<td>GENERAL</td>
<td>617-667-7677</td>
<td><a href="mailto:orthogeneral@bidmc.harvard.edu">orthogeneral@bidmc.harvard.edu</a></td>
</tr>
<tr>
<td>HAND</td>
<td>617-667-7673</td>
<td><a href="mailto:orthohand@bidmc.harvard.edu">orthohand@bidmc.harvard.edu</a></td>
</tr>
<tr>
<td>JOINTS</td>
<td>617-667-7672</td>
<td><a href="mailto:orthojoints@bidmc.harvard.edu">orthojoints@bidmc.harvard.edu</a></td>
</tr>
<tr>
<td>ONCOLOGY</td>
<td>617-667-7675</td>
<td><a href="mailto:ortho-oncology@bidmc.harvard.edu">ortho-oncology@bidmc.harvard.edu</a></td>
</tr>
<tr>
<td>SPINE</td>
<td>617-754-9000</td>
<td><a href="mailto:spinecenter@bidmc.harvard.edu">spinecenter@bidmc.harvard.edu</a></td>
</tr>
<tr>
<td>SPORTS</td>
<td>617-667-7678</td>
<td><a href="mailto:orthosports@bidmc.harvard.edu">orthosports@bidmc.harvard.edu</a></td>
</tr>
<tr>
<td>TRAUMA</td>
<td>617-667-7671</td>
<td><a href="mailto:orthotrauma@bidmc.harvard.edu">orthotrauma@bidmc.harvard.edu</a></td>
</tr>
</tbody>
</table>
In a life- or limb-threatening emergency, immediate surgery is often the only solution. But for degenerative medical conditions, it’s not necessary to rush into an operation. Patients often have a choice between surgical procedures and conservative measures, such as medications, injections, and physical therapy. Each option has benefits and risks, and what’s right for one person may not be right for another.

To help patients learn more about treatment options and make an informed choice together with their doctors, BIDMC is taking part in a Shared Decision Making project, sponsored by the Dartmouth-based High Value Healthcare Collaborative (HVHC). Focused on orthopaedics, the project introduces decision-making techniques and tools to patients considering surgery for hip or knee osteoarthritis, spinal stenosis, or herniated discs. For those diagnoses, treatment options are usually a matter of choice based on clinical analysis of symptoms by the physician and the personal preferences and circumstances of the patient.

“The premise is that when we involve the patient, and the patient is well informed, treatment outcomes and patient satisfaction will improve,” says Ayesha Abdeen, MD, of the Division of Joint Replacement and Reconstruction, who is a subject matter expert for the hip and knee component of the project. “We can accomplish more during a visit when the patient has information in advance, making our time with the patient more valuable.”

Engaging patients

Key to the decision-making project at its BIDMC site is trained health coach Mary Houle, RN, of the Department of Health Care Quality. She contacts all eligible patients by phone before they meet with the doctor and offers supportive, but nondirective assistance. Participating patients receive “decision aids,” either online or in booklet and DVD formats, describing surgical and nonsurgical alternatives and featuring patient testimonials. Web-based tools also help assess preferences, values, and knowledge of options.

“Giving patients information upfront is a good way to get them to better understand some fairly complex and subtle things about procedures,” says Spine Center Co-director Kevin McGuire, MD, who leads HVHC’s national spine surgery efforts, which include data collection and health care improvement projects. “But the decision aids only paint the broad picture. Mary helps to personalize it.”

“Engaging patients has a lot to do with teasing out their life circumstances and touching on what is personally relevant to them and what they value most,” says Houle. “What matters to one patient, may not matter to another.”

The project includes surveys before and after viewing decision aids as well as follow-up surveys to track patient progress at 3, 6, 12, and 24 months. Generally, patients who are experiencing worse pain opt for surgery and tend to report a more dramatic improvement initially. Over time, however, both the patients who decide to have surgery and those who do not end up doing well, says McGuire.

The surgeon’s role

The joint and spine orthopaedic surgeons determine if patients are candidates for surgery based on clinical findings, patient history, and x-rays. But the decision to operate largely depends on how much the patient’s arthritis or spinal condition interferes with daily activities and life in general.

“Many patients come with the notion: My x-rays say I have bad arthritis, therefore I need a joint replacement,” says Abdeen. “But I want them to understand that we don’t treat x-rays, we treat the patient. Giving them additional background regarding joint replacement and the alternatives actually helps us tailor the treatment specifically for that patient.”

continued on page 6
A vulnerable joint

The bones of the wrist are particularly vulnerable to injury, especially in younger and older people. Wrist fractures can be a first warning of osteoporosis, since they tend to occur 10 years earlier than hip or vertebral fractures.

Bone mineral density (BMD) testing is considered the gold standard for diagnosing osteoporosis but may not be the best indicator of fracture risk. “BMD testing gives you an idea of the quantity but not the quality of the bone,” says Dr. Rozental. “We know from previous research that plenty of patients who have fractures have normal bone density.”

In contrast, newer high-resolution CT scans show the actual make-up of the bone—the thickness of the trabecula as well as the cortex or outside of the bone. “We usually think of women losing skeletal strength at the time they go through menopause,” says osteoporosis researcher Mary Bouxsein, PhD, of the BIDMC Center for Advanced Orthopaedic Studies, “but our results clearly show, whether it’s genetics or lifestyle, that skeletal fragility can start early on in life.

“People who have multiple fractures before age 50 are the ones we worry about,” she adds.

Preventing fractures

By identifying women with fragile bones at a young age, doctors may be able to help them prevent further bone deterioration and reduce fracture risk. While medications are typically prescribed for osteoporosis in older people, no evidence supports their use in the young.

Researchers believe lifestyle changes are key to improving bone strength. “Since most bone formation occurs in the young, it’s important for kids and younger adults to make sure they follow recommended guidelines for calcium and vitamin D, which helps absorb it into the bones,” says Rozental. She also suggests weight-bearing exercise like walking and a well-balanced diet.

For older people, fall prevention is critical. “Only 10 percent of fractures are pathologic or ‘spontaneous,’ ” says Bouxsein, based on her past research. “The remaining 90 percent are due directly to falls.”

A better tool?

High-resolution CT scanning allows for a noninvasive way of looking at the microarchitecture of the bone, which, until now, could only be done by biopsy. However, just six of these machines are currently available in the country—three in Boston, one in New York, one at the Mayo Clinic, and one in San Francisco.

To determine the capabilities of this new technology and whether its use should be expanded, Bouxsein is currently conducting research with Douglas Kiel, MD, MPH, of the Institute for Aging Research at Hebrew SeniorLife. Together they are working with the Framingham Osteoporosis Study to collect measurements in 2,100 men and women and follow them prospectively for fracture. That data will be combined with five international study groups.

“By the time we’re done, this will be the largest and the first prospective study looking at whether this technique better identifies people at risk for osteoporosis than standard bone mineral density measures.”
The night before surgery, foot and ankle specialist Michael Corbett, MD, always reviews the procedures he’s about to perform. When people hear of this, they often say to him, “Wait a minute, you’ve been doing this for 40 years, you must know what you’re doing.” But the caring and dedicated orthopaedic surgeon wants to be sure every operation goes as well as possible.

This summer, Corbett will retire and turn over the reins of the Foot and Ankle Surgery service at Beth Israel Deaconess Hospital-Needham to fellow orthopaedic surgeon Joshua Lamb, MD. Lamb has worked closely with Corbett in Needham since joining the medical staff in November of 2012, and he also sees patients independently at BIDMC in Boston.

As orthopaedic foot and ankle specialists, Corbett and Lamb treat a wide variety of degenerative, traumatic, and congenital conditions. Each week, 80 to 100 patients come to BIDH-Needham with problems like arthritis, fractures, sports injuries, plantar fasciitis, and bunions. They care for most of these conditions using conservative, nonsurgical approaches.

But when necessary, these highly trained surgeons can fuse or replace arthritic joints, internally fix fractures, repair traumatic tendon ruptures, and treat joint pathology with minimally invasive, arthroscopic technique. Recently, the pair performed a complex tendon transfer, enabling a commercial fisherman, who had debilitating drop foot, to return to work.

“It’s gratifying to be able to solve someone’s foot and ankle problem that’s a source of pain or disability and help them regain their function and their livelihood,” says Lamb.

“Many times even relatively small procedures can make a huge difference to someone,” adds Corbett.

**Continuing education**

Orthopaedic foot and ankle surgeons train extensively and are capable of treating the entire musculoskeletal system. After medical school, they complete five years of general orthopaedic surgery training, followed by a year-long fellowship in foot and ankle surgery.

Corbett trained in orthopaedic surgery in the 1970s, about the time that the American Orthopaedic Foot & Ankle Society was founded to promote the subspecialty. For ten years, he was a full-time academic surgeon and ran a “Problem Foot Clinic” at Boston University Medical Center. In the late 1980s, he joined the Deaconess-Glover Hospital. (The hospital formally affiliated with BIDMC in 2002.) Since that time, he has enjoyed working at the small community hospital, where he performs surgery with a regular team of highly skilled professionals.

“I obviously have big shoes to fill,” says Lamb. “I’ve been overwhelmed by how much patients and co-workers love Dr. Corbett. I will surely miss learning from his wisdom and experience.”

“Josh has newer techniques that I wasn’t even trained with,” counters Corbett. “We work together on all these cases and have terrific discussions about different options and the pluses and minuses of each one as it applies to particular patients.”

**Postgame review**

After each patient’s operation, Corbett and Lamb have a “postgame review”—talking about what went well and what could be improved. “There’s no blame,” says Corbett. “We’re a team. We ask ourselves what could be done better the next time. Could we move the incision? Could we use different fixation? It’s a good way of getting smarter quicker.”

“From my standpoint,” says Lamb, “it seems as if I’ve had the good fortune to have an extra year and a half of fellowship.”

Corbett plans to wrap up his surgical career in May and continue to see postoperative and long-time patients through June. After he retires, he wants to expand his interests in teaching and medicine in new directions. He has already started to tutor English as a Second Language and work in wilderness medicine.

But Lamb says, “I’m going to make sure he carries his cell phone, so I can call him to discuss challenging cases.”
The project augments the already existing joint replacement preoperative education program, which covers all aspects of care before, during, and after surgery. But when patients are unable to attend the teaching class, the decision-making aids and support from the health coach prove especially beneficial.

By being well informed, patients are apt to feel more comfortable asking questions and expressing concerns during a doctor’s visit. Better two-way communication helps enable patients to receive the care they want.

“Expectations are a key driver of patient satisfaction,” says McGuire. “It’s important that reasonable results from surgery match the expectations of the patient. Shared decision making helps align these expectations, and therefore, we hope it will increase the patient’s satisfaction.”

Houle hopes the “personal touch” she provides through her conversations with patients about their options and preferences will also increase their satisfaction with both the outcome of their selected treatment option and overall care.

The Shared Decision Making project will continue until June 2015 and may expand to include other orthopaedic surgeons.

“Shared decision making has already shown value,” says McGuire. “One patient I had was gung-ho until she completed the decision aid and realized she was not quite ready yet for surgery based on the severity of the symptoms, recovery time, and reasonable expectation in terms of results. For me, that’s great, because when she is, I know she’ll do well.”

NEW E-MAIL OPTION ALLOWS FOR EASY PATIENT SCHEDULING

A new subspecialty specific e-mail system offers primary care practices another way to easily refer patients to BID orthopaedic providers. Physicians have always been able to call a special dedicated phone line to make referrals to each of the specialties in BIDMC’s Department of Orthopaedics. But now, they also have the option of contacting a specific specialty service through e-mail—e.g., orthosports@bidmc.harvard.edu. (See page 2 for a complete listing.)

The system guarantees a quick response and is especially useful when an appointment does not need to be booked on the telephone in the presence of the patient. The staff member simply sends an e-mail to the subspecialty e-mail address and includes the patient’s name, phone number, BIDMC medical record number (if known, or date of birth), diagnosis, and, as needed, preferred Department of Orthopaedics provider, and the administrative team from the department handles the rest.

“When we receive e-mails from PCPs via this system, we respond immediately,” says Operations Manager Stacy Lewis. “Then we call the patient to schedule an appointment within the next few days. When it’s requested, we can arrange for patients to be seen the same or next day.”

Patients are offered appointments according to their diagnosis and zip code. So, for example, a patient with a hand problem living in Dedham would be sent for care to nearby BID-Needham rather than Boston. The department listing, available to all PCPs in affiliated groups, includes the names of providers in each specialty, practice locations, phone numbers, and e-mail addresses to contact. Please contact Melisa Difusco (mdifusco@bidmc.harvard.edu) for a copy.

Dr. Kevin McGuire discusses surgical and nonsurgical spinal treatment options with a patient.
From twisting a knee while skiing to tapping on a keyboard for 10 hours a day; from training for a marathon to lifting too much weight in the gym; from falling onto an elbow to waking up with back spasm, musculoskeletal complaints are some of the most common reasons that patients visit their primary care physicians. Some injuries have obvious diagnoses, while others are not so straightforward. Take the case of Mrs. S.

Mrs. S is a 66-year-old female who had been seeing her PCP for treatment of shingles and a skin infection. A day after completing a course of antibiotics, she returned to clinic with pain in both shoulders. The pain began without an injury and grew worse by the day. Any movement of the arms caused sharp and searing radiation up into the neck and down towards the elbow. Mrs. S couldn’t brush her teeth or hair without nearly crying. Where was the pain coming from? Why did it start? What could she do about it? How could her doctor help?

This November 7 and 8, the Carl J. Shapiro Department of Orthopaedics will hold its first Continuing Medical Education (CME) course, Essentials of Orthopaedic and Musculoskeletal Medicine: A Multidisciplinary Approach for the Primary Care Physician. This two-day seminar will enable learners to improve their basic knowledge and skills in accessing and managing orthopaedic challenges, such as in the case of Mrs. S, most commonly seen by the primary caregiver.

Through lectures, panel discussions, and small group instruction, the course will review basic principles of musculoskeletal medicine, including anatomy and the orthopaedic physical examination and indications for diagnostic imaging. It will also review sports-related injuries; fractures; non-operative treatments, such as physical therapy and injections; and casting, splinting, and bracing. We will discuss when to refer a patient for surgery and how to recognize orthopaedic emergencies. Small group instruction will be given for focused examinations and in-office casting/splinting/bracing taught by operative and non-operative physicians from BIDMC’s Orthopaedic Department. As co-course director, my hope is that primary care physicians will engage in the educational process and develop strategies they can apply in their own practices.

When Mrs. S first saw me for a Sports Medicine consultation five days after the onset of her symptoms, she had been prescribed oral anti-inflammatories, but her pain continued to worsen. My initial examination suggested bilateral rotator cuff tendonitis, most likely from the antibiotics she had recently been prescribed. Though there was some chance that her pain was emanating from the cervical spine, this etiology was less likely given her clinical picture. Ultimately, we forwent a MRI of the neck for an ultrasound of each shoulder, confirming the suspected tendon changes and acute bursitis.

That Mrs. S had a primary shoulder problem is less important than the process involved in arriving at the diagnosis. As a result of our upcoming CME course, we hope your patients and our shared patients will have fewer office visits, more appropriate tests, and higher quality specialized care. In a word, it’s all about value: giving our patients the finest and most efficient health care possible, avoiding unnecessary costly tests, and most importantly, avoiding unnecessary prolonged suffering.

---

Coming soon!

People living west of Boston will soon be able to receive BIDMC-quality sports medicine care close to home. BIDMC’s brand new outpatient center in Newton, across from the Chestnut Hill Mall, will provide convenient access to the care and expertise of our orthopaedic specialists. Slated to open in July 2014, the 30,000 square foot facility will be known as BID-HealthCare Chestnut Hill. In addition to orthopaedic sports medicine, services will include a wide variety of orthopaedic care supportive specialty and ancillary services such as advanced urgent care, radiology, physical and occupational therapy, hand surgery, and rheumatology. Free parking will be available at the convenient Route 9 location.

Watch for more news in the fall issue of Orthopaedic Connections.
Faculty Activities

Megan Anderson, MD, Orthopaedics Oncology, participated in a panel discussion of “Metastatic Disease for the General Orthopedist: How to Avoid Conflict and Controversy” at the annual meeting of the American Academy of Orthopaedic Surgeons held in New Orleans, Louisiana, in March.

Mary Bouxsein, PhD, Center for Advanced Orthopaedic Studies, spoke on “What’s New in Skeletal Assessment and Failure Prediction?” at the skeletal health conference held by the International Osteoporosis Foundation and International Society for Clinical Densitometry in Orlando, Florida, in February.

Charles Day, MD, MBA, Hand, Wrist, and Elbow Surgery, recently published “A 20-year analysis of hand and wrist research productivity in Asia” in Hand Surgery (Asia volume). He also presented a poster on “Gender and Ethnic Diversity” at the annual meeting of the American Academy of Orthopaedic Surgeons held in San Francisco, California, last October. In addition, he took part in a panel discussion of “Current Perspectives in Distal Radius Fixation” at the annual meeting of the American Academy of Orthopaedic Surgeons in New Orleans, Louisiana, in March.


Arun Ramappa, MD, Sports Medicine and Shoulder Surgery; Edward K. Rodriguez, MD, Trauma; Paul Appleton, MD, Trauma; and Joseph DeAngelis, MD, Sports Medicine and Shoulder Surgery, and others published “Using Computed Tomography to Assess Proximal Humerus Fractures” in the March American Journal of Orthopedics.

Edward K. Rodriguez, MD, and Paul Appleton, MD, Trauma, and others published “Predictive factors of distal femoral fracture nonunion after lateral locked plating: A retrospective multicenter case-control study of 283 fractures” in the March issue of the journal Injury. He also co-authored a chapter on ankle fractures in Orthopedic Traumatology: An Evidence-Based Approach, published by Springer in 2013.

In addition, as part of the AAOS/Orthopaedic Trauma Association’s Distinguished Visiting Scholars Program, Rodriguez traveled in November with the US military to the Landstuhl Regional Medical Center in Germany, where he provided surgical care for service men and women wounded in Iraq and Afghanistan.

Academic Promotion

Congratulations to Mary Bouxsein, PhD, Center for Advanced Orthopaedic Studies, on her well-deserved promotion to Associate Professor of Orthopedic Surgery at Harvard Medical School. Her research focuses on understanding skeletal fragility from a biomechanics viewpoint.

BIDMC Orthopaedics recently hosted students from the Perry Initiative, a program that inspires women to become orthopaedic surgeons and engineers. Here Doug Ayres, MD, teaches students how to attach external fixators to bones.