UT Orthopaedic Residents Score 94th Percentile on AAOS In-Training Examination

In mid-January, the American Academy of Orthopaedic Surgeons (AAOS) released the in-training examination results for the 2009-2010 academic year. The orthopaedic residents were ranked in the 94th percentile, continuing the trend of high scores for the past seven years. The residents took the exam Saturday, November 14, 2009.

For the program to achieve this high score, they need to score above the mean in each of the 12 exam categories. This means the program cannot be excellent in some topics and weak in other topics. To achieve a ranking in the 90th percentile or above, the program must be above the mean in every category for the group, with no resident scoring below the 50th percentile.

This success in education lies in using an easy system that can be applied. In the Department of Orthopaedic Surgery, this technique is called the salami technique. Every day, one slice is taken, even if it is only a thin slice; it is one slice more than everyone else. This will definitely make the difference at the end of the preparation period for the in-training exam. For example, the resident’s slice is one hour per day for several months. At the end of the period, they will have studied approximately 50 hours more for the exam than the majority of residents in other programs. A little bit every day will make the difference. Homework or assignments are not given; but a structured approach is utilized in the department. In the UT Department of Orthopaedic Surgery, an objective to finishing reviewing all 14 topics in a reasonable time (1 hour per day) is set. The residents are asked to get up early and participate in the study sessions.

We wish UT’s orthopaedic residents congratulations on a job well done!

UT’s Orthopaedic Residency Program is a five-year program fully accredited by the Accreditation Council for Graduate Medical Education (ACGME). In 2007, the program was awarded an increase in resident complement by the ACGME for its quality of education. For the second year, we’ll be offering four, first-year positions for the 2010 residency match. There are currently 16 orthopaedic residents in the program.

Part I: Adult Stem Cell and Platelet-Rich Plasma: Value and Controversy

Most of the advances in orthopaedics have been in the area of minimally invasive surgery utilizing guided techniques, robotics and manufactured materials to promote bone healing. Very little attention, however, has been given to understanding and utilizing biological factors that facilitate the natural healing processes of the body. For example, a rotator cuff tear or tennis elbow is initially treated with conservative treatment such as physical therapy, non-steroidal anti-inflammatory medications and cortisone injections with a variable degree of success. The success is usually short-lived. Attention has recently been directed toward the body’s natural biological ability to heal itself and to how we can provide a local environment to facilitate this process. The two most importance advances in orthopaedics are the use of adult mesenchymal stem cells and platelet-rich plasma.

Blood is composed of red blood cells (which carry oxygen to the cells), white blood cells (which help kill bacteria and infection), and platelets. Platelets are rare cells, but are essential in hemostasis (which means causing bleeding to stop) and act as scaffolding for tissue repair. PRP refers to blood plasma with a high concentration of platelets containing pivotal growth factors and tools for repair and regeneration. Platelets attract stems cells and produce growth factors. These growth factors are attached to the cell and change the structure and...
the function of the cell. Significant changes to the cell can be made
with the injection technique. Physicians will be able to get it done
counted to ensure an adequate amount or isolated and grown to
be injected into the involved or injured area.
There is currently insufficient information related to the medium
different types of cells need to be grown in. For example, what is the
best medium to grow cartilage cells compared to bone cells? Cartilage
are needed in the case of arthritis, and bone cells are needed in the
case of a non-unian.
Growing mesenchymal stem cells will require several days after
obtaining the specimens. This procedure is costly, and insurance does
not currently pay for it, but initial studies are very promising. The whole
concept begins with the idea that all cells grow from these primitive
cells. If there is a high concentration of these primitive cells and they
are delivered into the involved area in a medium that will transform
them into the desired cells, they can multiply and be delivered into
the injured/damaged area and assume their desired duty and function.
These cells are usually from the patient's own body, so there are no
problems with rejection.

More research and studies are needed to judge the efficacy of the
process. It's important to note that these mesenchymal stem cells are
not embryonic and that this is not cloning. Every person has a bank of
valuable mesenchymal stem cells that we can isolate, grow, nourish and
— with the appropriate medium — inject into an injured/damaged
area to help in healing and regaining function.

Ultrasound-guided delivery is the preferred method for injection
into the damaged or injured area. PRP ultrasound-guided injections
are used freely for tennis elbow (lateral epicondylitis), patellar
tendinosis and partial ligament tears or partial cuff tears. These
injections have also been used for the Achilles tendon, but have not
been as effective. The technique must be used adequately to be effective.
Ultrasound-guided PRP injections appear promising and may eliminate
the need for surgery, but more studies are needed. The pitfall, however,
is that some insurances do not currently pay for it.

Multiple reports are also encouraging about the use of adult
mesenchymal stem cells to generate tissue healing. Adult mesenchymal
stem cells can multiply and differentiate to the desired cells in the
proper environment. There are very few cells that remain undifferentiated
and primitive in the body, but they can be changed to reparative cells
that become differentiated according to the body's needs.

Adult mesenchymal stem cells have two characteristics. First, they
divide, multiply and make copies of themselves. Second, they can
differentiate into the desired cells such as bone cells, cartilage cells and
cells that heal torn muscles and tendons, etc. These cells can be obtained
from marrow, blood or other sources. They can be concentrated and
delivered into the involved or injured area. There is currently insufficient information related to the medium
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counted to ensure an adequate amount or isolated and grown to
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Sacroiliac Joint pain is resistant to identification by all studies and
exams. The only proven effective method to diagnose sacroiliac joint
dysfunction. Insurance may resist the diagnosis of sacroiliac
joint numb. Sacroiliac joint stabilization by screws or stabilization and
fusion by screws and bone graft can only be done if patients respond
well to injections or radiofrequency ablation. The key is that the relief
must be real, but temporary before fusion is done which is needed in a
rare percentage of patients. Physicians should use stabilization or
arthrodesis of the joint after failure of all other measures. Some patients,
however, will continue to have pain after fusion of the sacroiliac joint.
It is imperative to exclude spine and hip pathologies when dealing with
sacroiliac joint pain. It is also imperative to exclude the sacroiliac joint
as the source for low back pain when dealing with spine pathologies.

Tarsal Tunnel Syndrome

Tarsal tunnel syndrome is a compression of the tibial nerve or its
associated branches as it passes through the tarsal tunnel. The medial
malleolus (the ankle bone) and the flexor retinaculum (band of fibrous
tissue) form a tunnel allowing the passage of nerves, tendons and veins.
This tunnel, which the tibial nerve passes through, is known as the
tarsal tunnel.

Tarsal tunnel syndrome is the result of compression of the tibial
nerve. It can also be the result of the following:
• Inflammation in the tissues around the tibial nerve
• Ache in the back of the foot
• Fractures in the foot and ankle
• Diabetes
• Rheumatoid arthritis
• Flat feet
• Patients with tarsal tunnel syndrome will likely experience the
following:
• Burning or numbness
• Swelling
• Pain along the inner side of the foot
• Pain where the nerve is squeezed or pinched
To diagnose tarsal tunnel syndrome, physicians will perform an
extensive history and physical examination. During physical
examination, physicians will look to see if patients have a positive
Tinel sign. A patient with a positive Tinel sign will report a tingling
sensation when the skin above the nerve is palpated (tapped). Nerve
conduction and velocity tests may also be utilized to confirm tarsal
tunnel syndrome. These studies measure how fast nerve impulses travel
along a nerve. If the impulses travel slowly across the ankle, it is a sign
of tarsal tunnel syndrome:
• Physicians will first try conservative treatment to alleviate
symptoms. These conservative measures include anti-inflammatory
medications, orthotics and injections. If conservative treatment fails,
surgical intervention may be needed. Similar to carpal tunnel release,
the goal of tarsal tunnel surgery is to release the flexor retinaculum.
To do this, the orthopedic surgeon will make a small incision in the skin
behind the inside of the medial malleolus. The nerve is then located
and released by cutting the flexor retinaculum. The surgeon will then
turn off the nerve to make sure it moves uninhibited. This can be
achieved in an outpatient surgical setting.

Piriformis Syndrome

Piriformis syndrome is a condition in which the piriformis muscle
irritates the sciatic nerve, causing pain in the buttocks that radiates
down the leg. To better understand piriformis syndrome, it is helpful to identify
the anatomy of the surrounding areas. The piriformis muscle begins
at the sacrum and extends to the greater trochanter. It is the muscle
responsible for providing external rotation for the hip and leg. The
sciatic nerve, which is responsible for providing motor and sensory
function to the lower extremities, passes underneath the piriformis
muscle on its way out of the pelvis toward the lower extremities.

If a physician wants to exclude the sacroiliac joint, a diagnostic
injection is usually done. It is unethical to diagnose the sacroiliac joint
as the source of lower back pain without an injection. Patients may
have had a diagnosis of lumbar strain for years before excluding sacroiliac
joint dysfunction. Insurance may resist the diagnosis of sacroiliac
joint because it was never in the initial diagnosis of the patient, but
it can’t be diagnosed without an injection. Injections can be done in
an outpatient or office setting or under fluoroscopy, CT scan or
ultrasound. Diagnostic injection does not have to utilize fluoroscopy
if the physician is well-versed in sacroiliac joint anatomy and is skilled
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Piriformis Syndrome continued

To identify piriformis syndrome, physicians will perform an extensive history and physical. Physicians will check muscle strength, reflexes and skin sensation; they will also check your gait and posture. The most accurate way to diagnose piriformis syndrome, however, is through diagnostic injections. Injections into the piriformis muscle may be given utilizing ultrasound, fluoroscopy or CT scan. If the patient’s pain is relieved following the injection, it is likely the piriformis muscle is the culprit. In addition, X-rays may be taken to rule out other problems in these areas.

Treatment for piriformis syndrome can range from conservative to surgical. Physicians will first try to manage piriformis syndrome conservatively utilizing anti-inflammatory medications, physical therapy and injections. If conservative measures fail, surgical intervention may be needed. The goal of surgical intervention is to release or loosen the piriformis muscle. This is achieved by either cutting the muscle where it attaches to the greater trochanter or cutting through the piriformis muscle. By releasing or loosening the piriformis muscle, pressure is taken off the sciatic nerves and symptoms should subside.