



Neurology & Neurosurgery Associates, P.A.

Providing complete neurological and spinal care

Volume 4 - No. 3

Newsletter

November 2003

"There are three general approaches "

Disc Replacement

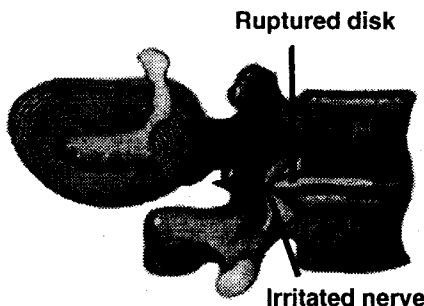
John C. Amann, M.D., F.A.C.S.

Ruptured and degenerative discs continue to plague a large segment of society. These structures cause pain when they fail to support the vertebrae and joints, or when they compress nerves. In either case society spends millions of dollars a year to address the pain and loss of productivity.

Treatment of disc disease has advanced on many fronts. For many years the concept of disc replacement (or **disc arthroplasty**) has intrigued those who treat this problem. Because of the complex forces on the spine, progress in this area lags behind other joint replacement technology. Axial loading, flexion, extension, rotation, lateral bending, torquing, and shearing are some of the forces the spine must tolerate. These forces are applied from the time one rises in the morning until lying down at night. Even sitting adds significant stress to some areas of the spine. Only recently have materials and devices been developed to tolerate these stresses long-term.

There are three general approaches to the disc replacement concept. Total disc replacement (arthroplasty), replace-

ment of the nucleus of the disc, and repair of the annulus of the disc are the options.



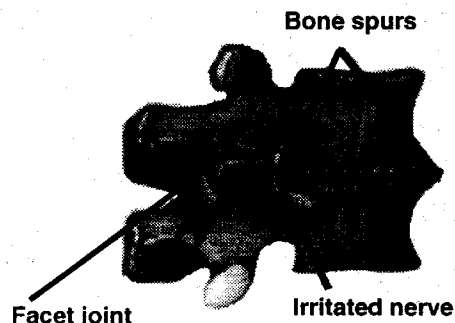
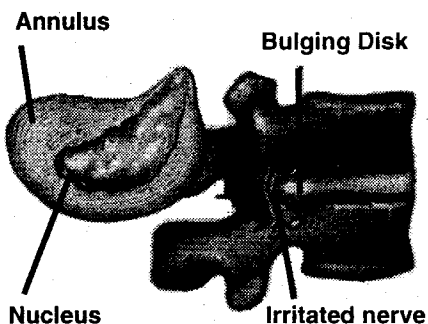
Total disc replacement has a good recent track record in Europe. Without the rigors of the FDA and the oppressive legal milieu, technology (both good and bad) advances outside the U.S. faster. Thousands of "artificial discs" have been successfully implanted in Europe. There are several varieties, but most consists of metal end plates sandwiching polyethylene cores.



Placement requires an anterior approach to the spine, abdominal contents and great vessels moved to one side. The exposure and procedure are very similar to that currently done for

an anterior lumbar interbody fusion (ALIF). These are major operations, but surprisingly well tolerated. While there is potential for complications (vascular, bowel, urologic, or nerve injury), most patients go home in two to three days and are recovered in four to six weeks.

The goal of disc arthroplasty is to re-establish normal motion to that segment of the spine. If these segments are fused instead, the wear and tear is displaced to adjacent levels. Fusion also results in some loss of flexibility or range of motion. There will likely still be a role for fusion. In some cases, arthroplasty will not solve the entire problem at that motion segment. Removing the entire disc can decompress the nerves, and eliminate most pain caused by the annulus. However, disc replacement will allow the posterior placed **facet joints** to continue to bear weight and move. If these joints are degenerated and a major source for pain, the continued motion provided by the artificial disc will be painful.



Patient selection for disc arthroplasty will be difficult. These are big and expensive operations for a problem

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What you should know about Diabetic Neuropathy

Juan L. Joy, M.D.

What is a Neuropathy?

The word "neuropathy" breaks down to **neuro** meaning nerve, and **pathy** meaning sick; so neuropathy in plain English means "sick nerves". The nerves that we are talking about are the nerves that go to the legs and arms, the so-called "peripheral nerves".

Who gets Neuropathy?

Diabetes is by far the most common cause of neuropathy. Almost 50% of diabetics will eventually develop this condition. The longer you had diabetes, the higher the chance that you will develop neuropathy, specially if your blood sugar is not under control. There are other causes of neuropathy, but again, diabetes is by far the number one cause in our country.

What causes Diabetic Neuropathy?

This is a hotly debated question for which we do not have a definite answer yet. We do know that there is something in the blood of diabetic patients that is toxic to the nerve fibers. Over time, the damage to these nerve fibers is what causes the neuropathy.

What are the symptoms?

The earliest symptom is usually numbness in the toes. At the beginning it may be intermittent, but eventually is present all the time. As the condition worsens (usually over years) the numbness will creep upwards in the leg, but it rarely goes above the knees.

Another prominent symptom, which develops sometime after the numbness, is pain. We are talking

about burning, needles & pins, stinging type pain. This is usually the most bothersome symptom.

The feet are typically affected first and to a greater extent than the hands.

Weakness is not common in diabetic neuropathy, but can be seen in severe cases.

Is there any treatment?

Unfortunately, diabetic neuropathy is not a curable condition. Once you develop the problem you will have it for the rest of your life. Patients that do not have their blood sugar well controlled tend to worsen

faster and to a greater extent than well-controlled patients. Thus, it is very important that you keep your blood sugar as well regulated as possible.

Regrettably, we do not have a medication that will make the numbness better, but there are plenty of medications that can help with the burning/stinging pain. These medications need to be taken on a regular basis in order to keep the pain under control. Your doctor will work with you to find an effective medication with a minimum of side effects.

With the proper treatment, most patients can carry normal lives despite having diabetic neuropathy.

"There are three general approaches"

Disc Replacement

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that "may not" be causing major disability. Back pain will be the common indication. There are numerous pain generators in the spine (muscles, ligaments, joints) in addition to degenerative discs.

Nucleus replacement offers a somewhat less drastic approach. The nucleus is the soft, resilient, shock-absorbing component of the disc. Gels and polymers can be injected into the center of the disc. Theoretically, this could be done via a limited posterior approach, even via a needle or cannula. Risks and recovery should be less than with arthroplasty. There is no large experience with this technique. The gels sometimes degrade and migrate. Consequences of failure and migrations are not quite as serious as with arthroplasty.

Recently some attention has turned to **annulus repair or replacement**. The tough outer ring of the disc causes some pain when it degenerates, thins, and stretches. In the lab, growth factors have been injected to "re-grow" the annulus. Clinical applications for this option are still years away. However, in many areas of medicine, this type of bioengineering holds the most promise long-term.

Disc arthroplasty will probably be a part of mainstream spinal surgery within the next five years. This technology will solve some problems, but no doubt create others. Like fusion, microdiscectomy, minimally invasive techniques, and conservative measures, disc arthroplasty will be an option offered to carefully selected patients.

"A sensation of movement"

Not All Dizziness Is Vertigo

by **Shailesh Rajguru, D. O.**

Dizziness is a very common complaint of many individuals. It remains many times of an unclear etiology despite evaluations that may have been completed. Oftentimes complaints of dizziness are difficult to describe for individuals. This also leads to a broad consideration of causes that range from inner ear disturbance, metabolic (blood work) disturbances, stroke, cardiac arrhythmias, blood pressure problems, and medications. It is always important, although often unable to elicit, to obtain an accurate history with symptomatology as best as possible.

In particular, dizziness is typically described as a sensation of light-headedness, "swimming or floating", or feeling "giddy". The etiology of these symptoms can be broad. Vertigo, however, is described as a sensation of movement affecting the patient or the environment. Symptoms are typically described as a "spinning" or "swaying". Vertigo is typically of a vestibular (inner ear) etiology and usually occurs in episodes with periods of normalcy in between attacks. The cause of vertigo typically involves crystals that have become dislodged into the posterior ear canal from the area of the utricle and the saccule.

Dizziness Etiologies to Consider

Although peripheral positional vertigo may be the most common etiology of an individual's complaints of "dizziness", additional considerations include Meniere's disease, sensory deprivation (i.e.,

polyneuropathy, visual impairment), vertebrobasilar insufficiency (transient ischemic attack, stroke), anemia, orthostatic hypotension (low blood pressure induced by sitting or standing), diabetes mellitus, hypoglycemia, carotid sinus syncope, cardiogenic syncope, infection etiologies including neurosyphilis, head trauma, basilar migraine, physiological considerations including dehydration, physical deconditioning, electrolyte abnormalities, and vertebral artery dissection.

Symptoms of Dizziness and Vertigo

Dizziness by itself typically should not include additional features with the exception of poorly described symptoms of feeling faint or light-headed. These complaints may be further differentiated from the considerations as listed above with an accurate history. In particular, peripheral positional vertigo is considered if complaints include nausea, possible vomiting, or symptoms are exacerbated with head movement. Orthostatic hypotension is considered if symptoms are triggered by rising or standing from a supine position. If acute neck pain triggers complaints of vertigo or symptoms were related to head or neck trauma, vertebral artery dissection may be considered. Unsteady or ataxic gait may lead to a suspicion of stroke. Visual disturbance, paralysis, and/or alteration of consciousness may raise the suspicion of vertebrobasilar insufficiency (poor circulation to the brain stem and cerebellum regions of the brain). If complaints include numbness or "tingling" of the feet, a diag-

nosis of polyneuropathy (nerve injury) of the lower extremities as an etiology the "dizziness" may be considered. Certainly, if there are complaints of chest discomfort, heart racing (tachycardia), low blood pressure or low pulse, a cardiac disorder as an etiology of the dizziness complaints is strongly considered.

Evaluations of Dizziness and Vertigo

Once an accurate history is able to be obtained, evaluations include simple considerations initially. These include:

- A review of the patient's medications that may be a cause of dizziness
- Blood pressure and pulse evaluation
- Risk factor assessment

Once preliminary review has been completed and etiologies excluded, multiple examinations are available for pursuit depending the patient's clinical history. These may include brain MRI examination, transthoracic echocardiogram, EKG, orthostatic blood pressure monitoring, carotid Doppler study, blood work including fasting glucose, electrolyte, complete blood count, possible cerebrospinal fluid analysis. Nerve conduction studies may be considered if a diagnosis of neuropathy is clinically suspected. If cardiac dysrhythmia is clinically suspected, electrophysiological (EPS) studies may be pursued. If physical deconditioning, dehydration is suspected, individuals may benefit from physical therapy and/or nutritional consultation. (Continued on Page 4) →



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"A sensation of movement"

Not All Dizziness Is Vertigo

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Treatment of Dizziness / Vertigo

Treatment is certainly almost entirely dependent upon the etiologies of the complaints that are able to be identified based on a thorough history and review and neurological examination. If peripheral vertigo (inner ear disturbance) is clinically suspected, individuals may benefit from vestibular exercises. Additional considerations may include treatment with Meclizine (Antivert) to be utilized as needed or as scheduled. Based on an individual's etiology of the symptoms and suspected clinical diagnosis for the complaints of dizziness, the par-

ticular treatment are recommended to be instituted. These may include treatment with an antiplatelet agent, (i.e., aspirin), treatment of blood pressure or other metabolic and electrolyte disturbances, changes in an individual's medications or doses, or treatment for underlying cardiac abnormalities

Optimal treatment of complaints of dizziness remains in the ability to obtain an accurate history. An accurate history will enable a physician to consider the etiologies of the complaints of dizziness. In turn, appropriate examina-

tions as described above can be pursued. As a result, these evaluations may be able to provide an etiology and diagnosis. In conclusion, a patient is able to best and potentially successfully treated for the complaints of "dizziness" through this pathway. Most importantly, it remains imperative to consider a broad base of etiologies although oftentimes evaluations as described above are unremarkable. With the cause of the complaints of dizziness remaining unknown, it is essential to identify and exclude potentially treatable factors which may help to improve the quality of life of an individual.