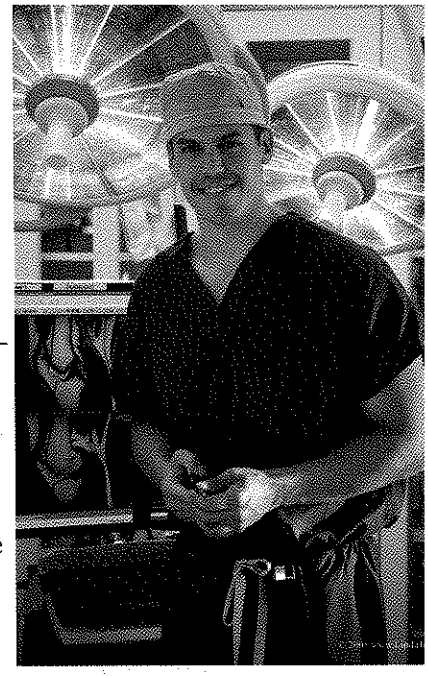
Orthopedic Advances

repairing and replacing "original equipment"



by: Teo Nissen, M.D.

Orthopedic procedures are changing how physicians and patients approach several common orthopedic challenges.

As Close to the "Original" as Possible

The human body is truly amazing; incredibly complex, delicate, durable and simply magnificent all at once. That's why physicians know there's nothing better than the original equipment. However, the natural process of aging or the stresses of sports injuries can lead patients to a point of pain and dysfunction and the need to repair their "original equipment." That's when it's time to consider arthroplasty—the complete replacement or repair of the joint.

The three primary areas of arthroplasty are hip, knee and shoulder, and new innovations in joint replacement and repair now come in many flavors.

Newer surface interfaces that have better wear characteristics are being designed. These come in the form of metals (aluminum, ceramics), articulations (including metal-on-metal or ceramic-on-ceramic), and plastic inserts and spacers using more durable polyethylene technology. There are also new innovations in the design of the prosthesis to recreate the normal anatomy of the joint being replaced.

Hip, Knee and Shoulder Arthroplasty

For the hip, there is a new innovative surgical resurfacing procedure called Birmingham Hip Resurfacing (BHR) arthroplasty. This is different from a regular total hip replacement in that it's a "bone sparing" procedure, preserving the normal bone of the upper femur and allowing normal mechanics and weight-bearing loads across the area. BHR is now an option for some younger and more active patients.

Total knee replacements have newer anatomic designs with better metal-plastic articulations that are expected to increase the longevity of the knee replacement and make it more durable. This gives younger, more active patients with arthritis of the knee the potential for a total knee replacement.

For the shoulder, there is new technology in both resurfacing procedures and procedures such as the "reverse total shoulder," which may be utilized in patients with arthritis and rotator cuff issues.

As boomers age but desire to remain active, medical advances in arthroplasty have given us many more treatment options. However, arthroplasty must still be approached deliberately and with full understanding of its implications. As an orthopedic surgeon, I'm keenly aware that when you replace someone's joint, it wears out – often much quicker than the original. The components we use for joint replacements are still not nearly as durable as what we're born with.

Sports Injuries

Over the last decade, there has been a refinement of arthroscopic procedures for many surgical issues that have been historically performed with an open incision. These refinements now allow us to use multiple 0.5 mm incisions along with a fiber optic camera to treat pathology that in the past would require large, open incisions of 5 to 7 cm. This results in reduced trauma to patients, significantly less dissection and blood loss, quicker postoperative recovery and less pain. Some of the problems that can be addressed in this manner are those involving the cartilage and meniscus, ligaments (such as ACL tears), problems with the rotator cuff and problems with shoulder instability or dislocations. There are also newer "biologic" techniques for addressing conditions such as Achilles and patellar tendonitis and golfer's and tennis elbow in young active patients.

Trauma

Primary innovations in treating traumatic injuries include minimally invasive surgical techniques during limb reconstruction. There have been innovations in metal alloy orthopedic plates, including a thinner profile and pre-contoured shape, which allow for more stable

fixes of complex fractures. The improved plate fabrication reduces dissection and allows quicker mobilization after surgery to minimize the complications associated with these types of fractures. There has also been refinement for minimally invasive techniques for fixing long bones, including computer-assisted techniques, which allow orthopedic surgeons to precisely match the anatomy of the injured extremity to that of the uninjured limb. For patients who experience bone loss or fracture-healing difficulty, there have been significant advancements in bone augments, substitutes and bone stimulators.

Pain Management

Good pain management is a significant concern of orthopedic surgeons. It can lead to quicker rehabilitation, better mobility, improved patient satisfaction and shortened hospital stays.

In acute postoperative pain management, there is an evolving clinical concept called preemptive analgesia. Its goal is to decrease the intensity of postoperative pain, decrease the amount of pain medication used and contribute to decreased number of days in the hospital.

Interoperative pain management is currently achieved by utilizing regional blocks, spinal anesthesia and epidural anesthesia. Long-acting anesthetics can be infiltrated into the wound site to help immediately post-op in the recovery room and continue providing benefit until the patient reaches the hospital bed on the nursing floor.

Improved pain control postoperatively has been achieved through innovations such as patient controlled analgesia (PCA) at bedside. It requires an IV pump and specific orders for a rate, time interval before the next dose is given and 24-hour dose maximum.

Although we haven't even come close to matching the durability and versatility of our original equipment, great advances have been made in arthroplasty and it is now a well-accepted treatment modality for restoring mobility and relieving pain in patients with hip, knee and shoulder injuries, overuse and osteoarthritis. Gains in technology now allow patients in their 40's and 50's to be eligible for joint repair or total joint replacement, offering millions the prospect of maintaining an active lifestyle with excellent mobility and advanced pain management. ■

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