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SURPRISING DATA ON ELDERLY SHOULDER SURGERY OUTCOMES // RETAIN BOTH CRUCIATES AND HAVE A NATURAL FEELING? // AND MORE!

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New Study: Excellent Outcomes for 70-Year-Old Patients With Rotator Cuff Surgery

To settle the issue—or at least put many minds at ease—Peter J. Millett, M.D., M.Sc., director of Shoulder Surgery at The Steadman Clinic in Vail, Colorado, got to work on the issue of whether older patients benefit from rotator cuff repair. Dr. Millett tells OTW, “There is a fair amount of debate about whether older people with rotator cuff injuries will heal well after surgery. ‘Just send them to physical therapy,’ is what many surgeons say. Our new 44-patient (49 shoulders) study, which has just been accepted for publication by the *American Journal of Sports Medicine*, proves that rotator cuff repair is effective in recreational athletes over the age of 70. We found excellent clinical results as measured by the American Shoulder and Elbow Standardized Shoulder Assessment Score; the average score was 90 on a scale of 100. When you look at our overall cohort of patients after rotator cuff repair, we find a mean score of 92, so the results in these active older patients were especially good.”

“We also found high levels of return to functional activity (skiing, golf, tennis, and cycling); a full 77% of the patients were able to return to their desired level of sports activity. In addition, the decrease in pain levels was highly statistically significant...and there were no revisions.”

“If the patient has good tissue quality at the time of arthroscopic repair, then we will take an aggressive approach to rehabilitation after surgery. We begin early passive motion on the same day of surgery, and get the person to active motion by three to four weeks postoperatively.”

“To my colleagues who are concerned about performing these surgeries on older patients I say, ‘If your patient is active, healthy, motivated, and has good tissue quality, then age should not be a factor.’ Sometimes the older athlete is written off. But these people look in the mirror and do not see themselves as older. They are young at heart! As long as the conditions are right, we should give them our best shot...and fix their rotator cuff tears!”

Teasing Out the Answer to: Should We Retain BOTH Cruciate Ligaments?

When it comes to knee replacement, a successful outcome is not synonymous with a pain-free, natural feeling knee.

Gwo-Chin Lee, M.D. is an assistant professor and program director of the Adult Reconstruction Fellowship program at the University of Pennsylvania in Philadelphia. Dr. Lee and his team are in the process of studying whether it is feasible to retain both cruciate ligaments during knee replacement in order to give a more physiologic feeling to an artificial knee. He tells *OTW*, "For whatever reason, one of five patients who undergo conventional knee replacement is dissatisfied despite reporting significant pain relief and improved function following surgery. I think part of the problem is that the current knee replacements we have available today don't reproduce normal knee kinematics and aren't designed for the higher demand patients. There are currently some designs on the market that attempt to reproduce individual anatomy and even retain both cruciate ligaments but there is relatively little data on whether these newer implants function significantly different compared to our traditional knee implants."

"I believe that there are currently several barriers that may prevent successful retention of both cruciate ligaments with traditional condylar femoral component and monoblock tibial base plate designs. Natural knee kinematics is complex and the movements of the natural knee are guided by the interplay between functioning cruciates and collateral ligaments and the articular surface geometries of the distal femur and the tibia. For these reasons, simply preserving the cruciate ligaments during TKA [total knee arthroplasty] may not be sufficient to restore physiologic kinematics."

"Today, the technology is available to customize femoral implants to individual patient anatomy but there are no options available on the tibial side. We have previously studied and published the complex anatomy of the distal femur, and now we are looking to see what are the anatomic relationships on the tibial side of the equation. We recently performed an anatomic study using 3D MRI technique of normal non-arthritic knees to defined the complex topography of the proximal tibia, mainly to see if a single piece tibial base plate could accurately reproduce normal anatomy. In this study, we found that there was great variability in the tibial anatomy. In 40% of patients, there was a significant difference greater than 3 degrees between the posterior slopes of the medial and lateral tibial plateaus. So, in this situation, a monoblock tibial component may not be able to reproduce normal anatomy."

"Conversely, in the rest of this sample, a single piece tibial component could closely restore the proximal anatomy of the tibia. I think that if a bi-cruciate retaining TKA is contemplated, one should preoperatively obtain advanced imaging (i.e., MRI) in order to determine whether there are significant differences in the medial and lateral slopes of the tibia. This emphasizes the point that as we move to produce a more anatomic reconstruction, we need to have a less cookie cutter approach."

"Future areas of research involve determining the best way to balance the cruciate ligaments against the collaterals if preserved. Determining the changes in ligament tension and function and their respective tolerances to changes in alignment and rotation will be crucial towards developing a reproducible surgical technique for retaining both cruciates in TKA. The best way to study this is undetermined but may involve the use of implantable sensors to study the lengths and tensions of each ligament, dynamically throughout knee motion. It is not going to be easy, but it is necessary information."

"I am not sure that a bi-cruciate retaining knee implant is quite ready for prime time in 2015. There are questions of alignment, laxity, and design that remain unanswered. Additionally, the instrumentation necessary to precisely reproduce anatomy may not be widely available or cost effective yet. Finally, we all know that a significant number of patients requiring knee replacements will not have intact or functioning cruciate ligaments, so the precise patient population that would benefit from these newer technologies remains undefined. Perhaps the best way to achieve this would be to use unlinked unicompartmental knee replacements to resurface the arthritic knee. I don't know."

"What I do know and believe that we need to introduce new technologies and surgical techniques responsibly with good science behind it. Conventional knee replacements are excellent, durable, and reliable at relieving pain and improving function in patients with knee arthritis. Any new technology will need to be benchmarked against 40 years of clinical results prior to wide adoption in the best interest of the patient."

Knee World: Perioperative Management Trumps Technology

After several years of reviewing the knee literature, one surgeon-pundit points to clear patterns in the data. Carl Deirmengian, M.D. is an orthopedic surgeon at the Rothman Institute in Philadelphia. For the past six years Dr. Deirmengian has co-authored a review article on what is new in adult knee surgery for *The Journal of Bone and Joint Surgery (JBJS)*. He tells *OTW*, "The goal of the article is to look back at the last year of knee surgery articles in several top journals and review all of the prospective level one studies to provide my opinion. This year my colleagues and I reviewed 25 papers and grouped them into several categories."

"One such category was minimization of blood loss, where the standout item appears to be the use of tranexamic acid. As for patient specific instrumentation, one study found no difference in clinical outcomes or component alignment between a group treated with traditional instruments and another with customized cutting blocks. Another study found that patient specific instrumentation didn't reduce operative time. They did say, however, that this may change as surgeons acquire more experience."

"In general, I am seeing a major change in thinking in our field. We had always previously assumed that the success of surgery has something to do with a given implant, technology, or approach to surgery. For many years in the joint replacement world we have been trying new methods such as minimally invasive surgery, or new technologies such as 'high-flexion' knees. Despite our tremendous efforts to develop these technologies and surgical approaches, there is no evidence to suggest that they result in any clinically significant benefit for the patient. If anything, increasing problems may have arisen, such as the risk of malalignment that has been described in some minimally invasive surgery studies."

"What is clear now is that it's not the technology that has made the difference for patients...it's the perioperative management. We get patients walking faster, we pre-emptively treat pain and nausea, we avoid intravenous narcotics, and they are discharged more quickly, etc. This is what really makes the difference. It is easy to say, 'oh, here is this new implant,' or 'wow, this minimally invasive approach to the knee is amazing,' but the data shows that patients don't get better faster with these innovations. We must accept that most of the variability in joint replacement results are not due to differences in technology or surgical technique. As long as there are no major complications during a knee replacement, I believe that the patients' early outcomes are mostly due to peri-operative management and biological variation in the response to surgery. Unfortunately, even developments in the realm of biologics have failed to be fruitful for patients with end-stage osteoarthritis. I don't see any reasonable hope of implant-free treatments for end-stage osteoarthritis any time soon."

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